

https://dspace.org/

The relationship between passion for the cause and sense of virtual community in a Facebook-based cause-related virtual community

Conradie, Bruce

2016

http://hdl.handle.net/10539/21555

Conradie, Bruce (2016) The relationship between passion for the cause and sense of virtual community in a Facebook-based cause-related virtual community, University of the Witwatersrand, <http://wiredspace.wits.ac.za/handle/10539/21555>

Downloaded from a DSpace repository. https://dspace.org/

The relationship between passion for the cause and sense of virtual community in a Facebook-based cause-related virtual community

A dissertation submitted to the

Faculty of Commerce, Law and Management,
University of the Witwatersrand,
Wits Business School

to fulfil the requirements of a

Master of Management by Research

Submitted by: Bruce Conradie

Supervisor: Antony Soicher

30 March 2015

Abstract

Our understanding of the psychological construct of sense of community has been developing steadily, particularly since the publication of the seminal work by McMillan and Chavis (1986). Pertinent to this study, the sense of community construct has been applied to the virtual world, leading to the concept of sense of virtual community (SoVC), that is, a sense of community felt by members of a virtual community.

This study synthesises the findings of the extant literature to build a multi-dimensional model of sense of community. Moving to a specific context, this study examines SoVC among members of cause-related virtual communities. Examples of such communities can be found in the Facebook communities that have developed around the various branches of the Red Cross and of World Vision.

Among members of such communities, some level of support for the mediating cause organisation can be presumed to exist. This is referred to in this dissertation as *Passion for the Cause* (PFC). Empirical and theoretical work on the interaction between SoVC and PFC is lacking. This study investigates the extent to which SoVC and PFC are associated and seeks to bring clarity to the nature of the association.

The research instrument was an online self-completion survey. The Facebook pages of South African cause organisations were used to invite community members to complete the survey. Respondents were participants in the Facebook-based communities of South African cause organisations (n = 67). The research instrument included a scale for SoVC (12 items) and a scale for PFC (6 items).

An exploratory factor analysis was done to identify the latent factors of SoVC in this context. Adequate support was found for the conceptualisation of three factors of SoVC, namely, General Benefit, Friendship, and Helping. This was followed by a series of multiple regression analyses aimed at testing the relationships between PFC and SoVC and its factors.

SoVC and PFC were found to be highly correlated. Furthermore, PFC was found to significantly predict SoVC. It was also found to predict the SoVC factor conceptualised as General Benefit. Finally, SoVC was found to predict PFC. Notably, PFC was found to be less able to predict SoVC than was SoVC able to predict PFC. Implications for the moderators of cause-related virtual communities are discussed.

Keywords: virtual communities; sense of community; sense of virtual community; social identity; passion

Declaration

I hereby declare that the work and material represented in this document is entirely my own. This material has not been submitted to any other university.

Bruce Conradie

20 March 2015

Acknowledgements

I extend my warmest and most sincere thanks to those whose guidance, advice, and tuition made this work possible:

Mr Antony Soicher, Lecturer, Wits Business School

Prof Gregory Lee, Research Director, Wits Business School

Mr Hennie Gerber, independent Statistician

Ms Nicky Israel, Senior Tutor, Department of Psychology, University of the Witwatersrand

Prof Louise Whittaker, Former PhD Programme Director, Wits Business School

Ms Jennifer Croll, Manager: Research Office, Wits Business School

I extend my thanks and great appreciation to those whose tuition in research methods provided the necessary foundation for this work:

Prof Anthony Stacey

Dr Kerrin Myers

The academic and support staff of the University of the Witwatersrand and Wits Business School, who are too numerous to mention

Thank you to the cause organisations who supported this work. I name here the organisations and not the individuals, as the support in some cases would have come from a number of people, and not just my contact person:

Johns Hopkins Centre for Communication Programmes

Love Life

Sonke Gender Justice

Little Fighters Cancer Trust

Tables of contents

Contents

Abbreviations ix
1. Introduction 1
1.1. Purpose of this study 1
1.2. Context of this study 1
1.3. Research problem 4
1.4. Significance of this study 4
1.5. Delimitations of this study 5
1.6. Assumptions 6
1.7. Structure of this dissertation 6
2. Literature review 7
2.1. Theoretical foundation of SoVC 7
2.2. Elements interrelated and not discrete 8
2.3. Refining the McMillan and Chavis (1986) framework 8
2.4. Expanding SoC and SoVC concepts 9
2.5. Requirements for SoVC 10
2.6. Dimensions of SoVC 11
2.7. Summary of SoVC dimensions 25
2.8. SoVC dimensions in cause-related communities 27
2.9. Passion for the Cause 28
2.10. Research questions 29
3. Research methodology 30
3.1. Research philosophy 30
3.2. Research design 31
3.3. Population and sample 32
3.4. Research instrument 33
3.5. Procedure for data collection 33
3.6. Ethical considerations 35
3.7. Limitations of the study 35
3.8. Profile of respondents 36
4. Results 37
4.1. Exploratory factor analysis 37
4.2. Regression analyses 46
5. Discussion 67
5.1. Overview 67
5.2. Relationships between constructs 67

5.3. Factors of SoVC 68
5.4. PFC effects 69
5.5. Summary 70
5.6. Validity and reliability 71
6. Conclusions and recommendations 73
6.1. Conclusions of the study 73
6.2. Recommendations 73
6.3. Suggestions for further research 74
Appendix 1: SoVC and PFC scales 75
SoVC scale 75
PFC scale 76
Appendix 2: Data collection instrument 77
7. References 81

Tables

Table 1: The McMillan and Chavis (1986) components of SoC 7
Table 2: SoVC dimensions and their elements 25
Table 3: Surveyed cause organisations 34
Table 4: Correlation matrix: SoVC variables (16) before parcelling 39
Table 5: SoVC reduced scale (13 items) 40
Table 6: EFA: Item communalities (12 variables) 42
Table 7: EFA: Structure Matrix (12 variables) 43
Table 8: EFA: Pattern Matrix (12 variables) 43
Table 9: EFA: Pattern Matrix; Loadings < 0.4 omitted (12 variables) 44
Table 10: EFA: Pattern Matrix; 3 factors (12 variables) 44
Table 11: EFA mean and median factor scores (12 variables) 45
Table 12: Correlation matrix: SoVC, PFC, and nine demographic variables 48
Table 13: Correlations between independent variables (3 variables) 53
Table 14: Multiple regression: Results 54
Table 15: Multiple regression stepwise: Results 55
Table 16: Multiple regression: Correlations between independent variables (3 SoVC factors) 58
Table 17: Multiple regression: Results (SoVC factors predicting PFC) 60
Table 18: Multiple regression stepwise: Results 60
Table 19: Three regression analyses: Results 70

Figures

Figure 1: SoVC dimensions and sub-dimensions 27
Figure 2: EFA scree plot 42
Figure 3: Studentised residuals against unstandardised predicted values (PFC = IV; SoVC = DP) 49
Figure 4: Partial regression plot: FB Frequency and SoVC 50
Figure 5: Partial regression plot: FB Access at Café and SoVC 51
Figure 6: Partial regression plot: PFC and SoVC 51
Figure 7: Multiple regression plot: Studentised residuals against unstandardised predicted values 52
Figure 8: Multiple regression: Normal P-P plot (3 IVs) 54
Figure 9: PFC and SoVC plot, with regression line 55
Figure 10: Studentised residuals against unstandardised predicted values (SoVC factors = IVs; PFC = DV) 56
Figure 11: Partial regression plot: F1 General Benefit against PFC 57
Figure 12: Partial regression plot: F2 Friendship against PFC 57
Figure 13: Partial regression plot: F3 Helping against PFC 58
Figure 14: Multiple regression: Normal P-P plot (3 IVs) 59
Figure 15: F1 General Benefit plotted against PFC 61
Figure 16: Partial regression plot: SoVC (Mean of 3 Factors) and PFC 63
Figure 17: Studentised residuals against unstandardised predicted values (SoVC [Single score] = IV; PFC = DV) 64
Figure 18: Multiple regression: Normal P-P plot (single IV) 64
Figure 19: SoVC (Single Score) plotted against PFC 65

Abbreviations

EFA	Exploratory factor analysis
PFC	Passion for the Cause
SIT	Social Identity Theory
SoC	Sense of community
SoVC	Sense of virtual community

1. Introduction

This chapter introduces the broad aspects of this research and includes sections on the purpose of the study, context of the study, the research problem, significance of the study, delimitations, and assumptions underlying the study.

1.1. Purpose of this study

This study deals with virtual communities mediated by Facebook; with causes and the organisations that support causes (for example, the cause of advocacy against HIV and the organisation Love Life); and with sense of community among members of these virtual communities. The foundation for this study is the theoretical framework of sense of community (SoC) put forward by McMillan and Chavis (1986). They posited four dimensions of SoC, namely,

- Membership
- Influence
- Fulfilment of Needs
- Shared Emotional Connection

A sense of community among members of a virtual community has been referred to as a *sense of virtual community* (SoVC) and is referred to as such for the purposes of this study (for example, G.-L. Chen, Yang, & Tang, 2013; Cho & Jahng, 2014; Welbourne, Blanchard, & Wadsworth, 2013). This study examines the effects of SoVC in cause-related virtual communities, a type of community for which empirical studies are lacking. Can SoVC be found in cause-related virtual communities? What are the latent factors underlying SoVC in this type of social network? In this environment, does Passion for the Cause enhance SoVC?

1.2. Context of this study

1.2.1. Motives for participating in cause-related virtual communities

Individuals are participating in cause-related virtual communities in significant numbers. At the time of writing, just one of a number of American Red Cross Facebook pages had 668 000 fans (individuals who have ‘liked’ the page); World Vision USA had 1-million fans; and RED, an HIV-related cause, had 3-million fans.

The administrators of cause-related virtual communities are making efforts to drive participation. Causes are seeking to garner support. One form of support is participation in events. This can be seen in various Facebook pages promoting the

Slutwalk, an event held in August in various cities around the world. Slutwalk Facebook pages are used to garner participation in the August events (among these are pages for Slutwalk Johannesburg; Slutwalk Chicago; and Slutwalk Cape Town).

Causes are using social media for fundraising. For example, RED aims to sell products to raise funds. Cancer Research UK, to mention just one of many examples, has a 'Donate' button on its Facebook homepage. Causes are also using social media for generic branding (unrelated to a specific campaign or fundraising drive).

In summary, causes want individuals to participate in their social media networks and multitudes of individuals are obliging. A double benefit can be gained from anything that stimulates individual involvement and makes that involvement more rewarding for the individual. Existent studies show that, in a virtual community context, SoC has the potential to do just that.

1.2.2. SoC and SoVC

1.2.2.1. Defining community and virtual community

Even in individualistic Western societies, the term *community* seems to be readily understood. However, this understanding is probably more the outcome of a form of intuition than of a reasoned understanding. Even where reasoning exists, a consensus eludes us. In 1955, when George Hillery set about analysing definitions of the term, he chose 94 definitions for inclusion in his analysis and even that high number did not embrace all the terms that had been advanced (Hillery, 1955). A usable definition of *community* is that it "consists of persons in social interaction within a geographic area and having one or more additional common ties" (Hillery, 1955, p. 111).

Since Hillery advanced his definition, computer-network-based communities have arisen and are widely referred to as *virtual communities*. As far back as 1979, virtual communities were found to exist among users of Usenet newsgroups (Ridings & Gefen, 2004). In contrast to communities as they were understood previously, these communities are not geographically defined or delimited (Rothaermel & Sugiyama, 2001).

When defining virtual communities, Rheingold's definition is often cited (Rheingold, 1993, p. 7), namely, that virtual communities are "social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace."

The term *virtual community* is sometimes used loosely to refer to any group of individuals interacting frequently via a network such as the Internet. On the contrary,

Jones (1997) argued cogently that such groups should only be referred to as *virtual communities* if there are affective bonds between members. Blanchard and Markus (2004) were even more prescriptive, saying that a virtual community must involve SoVC.

To groups in which such bonds are lacking, Jones (1997) applied the term *virtual settlements*. As cogent as Jones's argument is, it demands the use of the intuitively strange term *virtual settlements*. For this reason, this dissertation uses the term *virtual community* to refer loosely to any interacting networked group, whether or not affective bonds exist among members. That is in keeping with Porter's (2004) definition. He defines virtual community as "an aggregation of individuals or business partners who interact around a shared interest, where the interaction is at least partially supported and mediated by technology and guided by some protocols or norms."[1]

1.2.2.2. Defining SoC and SoVC

Like *community*, the concept of SoC is elusive. Intuitively, we know SoC exists and we can readily think of synonymous terms, such as, a *sense of belonging*. However, if we asked a member of the public to define the term, we should not expect an informative answer. It appears that we know it exists but struggle to define it. That is indeed evident in the research work done to date.

For defining and explicating SoC, the work of McMillan and Chavis (1986) is the starting point for many a study, as it is for this one (discussed under '2.3. Refining the McMillan and Chavis (1986) framework').

By way of definition, the four elements of SoC identified by McMillan and Chavis (1986) are frequently used, although they are less a definition than a breakdown of the components of SoC. The elusive nature of the concept is brought home by the fact that David McMillan, the McMillan of McMillan and Chavis (1986), revised the model in 1996 but failed to improve on the popularity of the model that he co-developed ten years earlier.

Despite the frequent use of the McMillan and Chavis (1986) framework as a quasi-definition, a succinct and useable definition of SoC was put forward by McMillan ten years earlier than the 1986 work. He defined sense of community as "a feeling that members have of belonging and being important to each other, and a shared faith that

[1] Page numbers missing from HTML version.

members' needs will be met by the commitment to be together" (unpublished paper, cited by Chavis, Hogge, McMillan, & Wandersman, 1986, p. 25).

Can a SoC exist among members of a virtual community? A number of studies have come up with a positive answer to this (for example, Blanchard & Markus, 2004; Zhang, 2010). In keeping with prior use, the term 'sense of virtual community' (SoVC) is used in this dissertation to refer to a SoC among member of a virtual community.

In this dissertation, a *cause-related virtual community* refers to the group of individuals who follow the social media activities of a cause-related organisation or who interact with other individuals who are following that organisation's social media activities.

1.3. Research problem

Addressing the constructs of sense of virtual community (SoVC) and Passion for the Cause (PFC), the research problem of this study is:

> To evaluate the interactions between SoVC and PFC in cause-related virtual communities.

This study uses a quantitative methodology to evaluate the interactions between SoVC and PFC in Facebook-based social networks mediated by South African cause organisations. An exploratory factor analysis was used to detect the latent factors of SoVC in this context. This was followed by a series of multiple regression analyses, aimed at measuring the predictive power of SoVC for PFC and of PFC for SoVC. This study has been conducted using a positivist conceptual framework.

1.4. Significance of this study

This study builds on the theoretical and empirical work done on SoC and SoVC, with an emphasis on the foundation laid by McMillan and Chavis (1986). Studies have examined a wide range of aspects of SoVC, including its antecedents and its factor structure. Nonetheless, work on SoVC in a cause-related environment has been lacking. Moreover, the association or interaction of SoVC with PFC has not been studied. In addition, we lack studies of SoVC in a South African context or in an African cultural setting.

This study addresses each of these gaps. It yields insights into SoVC in an online cause-related environment. The online community it deals with is South African, which distinguishes it from prior studies, which have focused on North American, European, and Asian communities.

This study has direct implications for the management of social media by non-profit organisations. Administrators of cause-related virtual communities strive to stimulate participation in their networks. SoVC can foster participation. Thus, it is of practical use to these administrators to understand the dimensions of SoVC, an understanding that could lead to more effective efforts to stimulate it.

1.5. Delimitations of this study

Online social networks are mediated by a wide range of technological platforms. We cannot be sure that SoVC in a cause-related virtual community does not vary by technology platform type. For this reason, this study concentrates on only one technology platform, namely, Facebook.

The psychometric features of psychological constructs may vary from one population or culture to another (Furr, 2011). Indeed, the implications of SoC theory are that SoC and SoVC will vary from culture to culture, nation to nation, age group to age group, and potentially in terms of any demographic or psychographic characteristic that is patent enough to create perceived similarities or differences among community members. In order to eliminate the confounding influence of these other variables, in particular nationality and culture, the current study was limited to South African participants. The advantage of this was to narrow the range of cultures that influenced participants, which was thus expected to make the research instrument more sensitive to the effect of PFC.

Confining the cause communities under investigation to those appealing to South Africans had another advantage, namely, that it limited the size of the communities. SoC theory posits that community size affects SoC and SoVC. Since the American Red Cross Facebook community is 668 000 strong, do its members have a SoVC? Such a possibility is implausible. The inclusion of cause-related virtual communities where no SoVC was possible or likely could have undermined the results. For this reason, these social networks were excluded from this study. In practice, because the social networks were confined to South African networks, it was not necessary to actively exclude any network, since the largest of the networks under investigation had only 108 000 members.

Causes vary widely. The extent to which the nature of the cause affects the passion it engenders is not known. For this reason, the current study narrows the nature of causes under investigation. This reduces the possibility that a cause may engender strong SoVC but weak PFC, which would obscure the interaction of PFC and SoVC. The causes under investigation were loosely defined as *causes dealing with health and with responsible living*.

1.6. Assumptions

For this study, the assumption was made that respondents were honest and truthful in answering the survey questions. This assumption was reasonable, given that (a) respondents were anonymous; and (b) no questions were asked that required disclosure of sensitive personal information.

A plausible cause for inaccuracy of the responses to this study has to do with PFC. Respondents may have exaggerated their PFC, driven by social desirability bias, a desire on the part of survey respondents to give socially acceptable answers (Nederhof, 1985). Despite the plausibility that such a bias existed on the part of respondents, the effect is likely to have been negligible. Respondents were entirely anonymous (they were not asked to provide their names). In addition, respondents were interacting with a computer interface, rather than a person physically present and this response context can reasonably be expected to have suppressed social desirability biases. Finally, the absolute levels of PFC were not germane to the key findings of the current study.

1.7. Structure of this dissertation

The remainder of this dissertation diverges slightly from the traditional structure. Chapter 2 presents a review of the literature. Chapter 3 broadly outlines the research methodology. Chapter 4 presents the purpose, methodology, and results of an exploratory factor analysis. Chapter 5 does the same for a series of regression analyses. These are followed by the discussion of results in Chapter 6 and a conclusions and recommendations in Chapter 7.

2. Literature review

2.1. Theoretical foundation of SoVC

Much of the work on both SoC and SoVC has been based on the work of McMillan and Chavis (1986). They developed a framework for the components of SoC, as it exists in the offline world. The framework has been widely accepted and has become the foundation for considerable further theoretical and empirical work.

McMillan and Chavis (1986) consolidated the SoC construct into four components, namely, Membership, Influence, Fulfilment of Needs, and Shared Emotional Connection. They listed some of the antecedents of these but the work implies the authors were not attempting to list completely the subcomponents (allowing scope for more to be added in subsequent work, as has been done). Thus, for Influence they identified no subcomponents and for Fulfilment of Needs and Shared Emotional Connection gave only examples of subcomponents. The components and subcomponents, as identified by McMillan and Chavis (1986), are listed in Table 1.

Table 1: The McMillan and Chavis (1986) components of SoC

Component	Subcomponent
Membership	Boundaries
	Emotional safety
	Sense of belonging
	Personal investment
Influence	—
Fulfilment of needs	Status
	Group success
	Interpersonal attraction
Shared Emotional Connection	Contact
	Quality of interaction
	Closure to events
	Shared valent event
	Investment
	Effect of honour and humiliation
	Spiritual bond

Two of the elements—Contact and Shared Valent Event—were only proposed theoretically by McMillan and Chavis (1986) but subsequent work has validated these constructs (Blanchard & Markus, 2004; Köbler, Riedl, Vetter, Leimeister, & Krcmar, 2010). The McMillan and Chavis (1986) framework is the starting point for the

framework discussed in detail in this review of the literature. Recognising a need to adapt the framework to virtual communities, the 4 components and 14 subcomponents identified by McMillan and Chavis (1986) are expanded to 7 components and 32 subcomponents. Where possible, elements have been added as subcomponents of the four components identified by McMillan and Chavis (1986). Only those new components that did not fit have been listed as main components rather than subcomponents. The result is a framework that is applicable to SoC in a virtual environment.

2.2. Elements interrelated and not discrete

The components of the framework, both those conceptualised by McMillan and Chavis (1986) and those added subsequently, are extremely difficult to distinguish from one another. Consider, for example, one of the more glaring difficulties: is a Sense of Belonging synonymous with SoC? McMillan and Chavis (1986) list the former as a component of the later but other writers occasionally speak of the two as synonymous (Blanchard, 2004). Evidencing another form of uncertainty: should Shared Emotional Connection be a core dimension or is it a merely a concept that categorises other dimensions (that should in themselves be considered dimensions)? We have much work to do to eliminate the overlap between components, but this is the not purpose of the current study. Rather, the current study attempts to identify as many components as possible.

McMillan and Chavis (1986) saw the elements working together in a cyclical and self-reinforcing way. Subsequent investigators have supported this. Blanchard and Markus (2004), for example, identified three “social processes” that had equivalents in the McMillan and Chavis (1986) framework and concluded that the three processes cannot credibly be separated into discrete elements. Nevertheless, the elements discussed below are treated largely as discrete. This is partly to simplify the material that might otherwise be intolerably complex and partly because we have yet to identify all the interconnected threads of cause and effect. Further studies are needed if we are to understand fully the relationships between factors.

2.3. Refining the McMillan and Chavis (1986) framework

The McMillan and Chavis (1986) framework has been refined in at least four ways. First, granularity has been added to the components by identifying their antecedents (Ashforth & Mael, 1989; Barker, 2009; Dholakia, Bagozzi, & Pearo, 2004; Koh & Kim, 2003; McMillan, 1996). Second, the relationships between components have been

identified (Dholakia et al., 2004; Zhang, 2010). Third, a sizeable body of work has developed that applies the framework to virtual communities (Blanchard, 2008; Blanchard & Markus, 2004; Zhang, 2010). Fourth, weaknesses in the framework have been brought to light, particularly when the framework is applied to virtual communities. One such weakness is that trust was virtually overlooked. This has been addressed in a number of subsequent studies (McMillan, 1996; Porter & Donthu, 2008; Valenzuela, Park, & Kee, 2009; Zhang, 2010). After ten years, David McMillan himself reworked the framework extensively (McMillan, 1996).

Nevertheless, the original McMillan and Chavis (1986) framework remains the starting point for many subsequent studies, in both offline and online contexts. In the light of its continued widespread acceptance, it forms the theoretical foundation for the current study.

Although a substantial body of work informs our understanding of sense of virtual community (SoVC) in a diversity of virtual communities, we lack empirical evidence for how SoVC might be distinct in cause-related virtual communities. Furthermore, these communities may differ significantly from other virtual communities in that PFC may have sufficient influence to significantly affect SoVC. We lack knowledge of the interacting effects of SoVC and PFC in cause-related virtual communities. Specifically, we lack empirical evidence that the two constructs may be correlated or that they may have a causal relationship.

2.4. Expanding SoC and SoVC concepts

SoC is an elusive concept. It is so closely allied to sense of belonging that some effort is needed to keep the two conceptually discrete. Some commentators treat the terms as synonymous (Blanchard, 2004; McMillan & Chavis, 1986). Nonetheless, sense of belonging is mostly seen as a component of SoC.

SoC is closely allied to social identification. It may useful to regard it as a specific form of social identification, because, while it is clear that SoC involves social identification, not all social identification involves SoC. A case in point is the concept of psychological groups proposed by Turner (1984). The Manchester United supporter experiences some social identification with other Manchester United supporters (the psychological group), but experiences no SoC (Ashforth & Mael, 1989).

Thus, definitions of SoC tend to stray into descriptions, lists of the components comprising the concept. These include identification with the community, a sense of belonging, a sense of connectedness to other community members, and an emotional connection with the community as a whole.

In contrast, SoVC is easy to understand (provided SoC is already understood). The view underlying the current study is that SoVC is a specific form of SoC, that is, it is SoC among members of a virtual community. Accordingly, the elements comprising SoC are also the elements comprising SoVC. Researchers have yet to identify an element of SoC that is incompatible with SoVC.

2.5. Requirements for SoVC

SoVC has been found to exist in virtual communities. Blanchard (2004) found evidence of it in a sport-related community. Blanchard (2008) found it among women participating in various parenting communities. Zhang (2010) found it among US university students who were users of social networking sites.

Unless various factors are present, SoVC will not exist. Borrowing Hertzberg's concept of hygiene factors (Herzberg, 1966), these factors must be present for SoVC to exist but their presence does *not* ensure SoVC will exist (whereas their absence ensures it will *not*). SoVC cannot exist if no virtual community exists. Nor will SoVC develop in a virtual community that springs up, endures for a short while, fails, and becomes moribund. For a virtual community to endure, continued participation is needed (Bateman, Gray, & Butler, 2011; Jin, Cheung, Lee, & Chen, 2007; Junco, 2012; Koh, Kim, Butler, & Bock, 2007; Moore & Serva, 2007; Rafaeli, Ravid, & Soroka, 2004; Shang, Chen, & Liao, 2006; Yoo, Suh, & Lee, 2002). The hygiene factors listed below are needed for continued participation. The list is not exhaustive.

Virtual place—Communities can develop around a shared physical place, or a virtual place, or a combination of the two. By definition, a virtual community requires a virtual place, a need that has been discussed in the literature (Goodings, Locke, & Brown, 2007; Harrison & Dourish, 1996; Jones, 1997). Today, virtual places are readily available. They include Facebook, Twitter, Myspace, LinkedIn, Pinterest, and Flickr.

A virtual place does not necessary build SoVC among members of a social network, as can be seen in the existence of 'virtual publics' (Jones & Rafaeli, 2000). Dholakia et al. (2004) called these 'network-based virtual communities'. It may be easier to think of a virtual public as a virtual community with the SoVC stripped off, but that will not stand as a definition. Jones and Rafaeli (2000: 216) define *virtual publics* as "computer-mediated spaces, whose existence is relatively transparent and open, that allow groups of individuals to attend and contribute to a similar set of computer-mediated interpersonal interactions".

Frequent and ongoing interaction—Interaction among members of the social network must be frequent enough and long enough. Members must interact frequently

for a network to be considered a virtual community (Ridings & Gefen, 2004). Interaction must also be ongoing (Ridings & Gefen, 2004; Zhang 2010).

Success factors—A range of other success factors for virtual communities have been identified. They include a clear purpose, clear definition of members' roles, adequate leadership, useful content, and sufficiently capable technology (Koh et al., 2007).

2.6. Dimensions of SoVC

As discussed earlier (2.1. Theoretical foundation of SoVC), the framework presented here for SoVC builds on the McMillan and Chavis (1986) framework for SoC. This is in keeping with numerous studies that followed the publication of McMillan and Chavis (1986). The factor structures of SoC and of SoVC have been investigated in a variety of contexts, including the workplace (Burroughs & Eby, 1998), community organisations (Hughey, Speer, & Peterson, 1999), city blocks (Long & Perkins, 2003), rural communities (P. Obst, Smith, & Zinkiewicz, 2002), neighbourhoods (P. L. Obst & White, 2004), students (P. L. Obst & White, 2004), gay men (Proescholdbell, Roosa, & Nemeroff, 2005), Usenet newsgroups (Blanchard, 2007), an online community for the elderly (Abfalter, Zaglia, & Mueller, 2011), and Facebook (C. Chen & Lin, 2014). The dimensions of SoVC presented below are a synthesis of existing work, conducted for the current study. It presents a more granulated and inclusive view of SoVC than has been presented in the literature to date.

2.6.1. Membership

McMillan and Chavis (1986) define membership as "the feeling of belonging or of sharing a sense of personal relatedness". The implication is that membership cannot be extricated from sense of belonging and *vice versa*. The individual cannot have a sense of belonging without being a member and he cannot be a member without an accompanying sense of belonging. Identified here are the five subcomponents that comprise the McMillan and Chavis (1986) dimension of Membership. They are Boundaries, Emotional Safety, Sense of Belonging, Personal Investment, and Common Symbol System. To these a sixth subcomponent, Recognition, has been added.

2.6.1.1. Boundaries

The effect of Boundaries is to identify and distinguish between individuals who belong to the community and those who do not. This is a critical element of all communities

and is apparently undisputed. McMillan (1996), for example, kept the Boundaries construct intact. By extension, this is a critical element of SoVC. If a member is to have a sense of inclusion in the virtual community, that member must perceive that a virtual community exists and that he or she is a member thereof. For this, Boundaries are necessary.

However, with most virtual communities, individuals can “join” or “leave” the community at any time. From this, we can infer that the boundaries defining some virtual communities must be weak. This must apply to cause-related virtual communities on a platform like Facebook. They are weak in that they allow individuals to cross easily from one bounded space to another. They are weak because, we can infer, their conceptual existence in the minds of members is vague.

Boundaries make emotional safety possible. Boundaries make it possible to identify who can be trusted, that is, the individuals who make up the collective “us” (McMillan, 1996). Emotional Safety, in the McMillan and Chavis (1986) framework, is a subcomponent of Membership. This illustrates the point already made, that the components and subcomponents work together in a cyclical and mutually reinforcing way.

2.6.1.2. Recognition

Recognition is the ability of community members to identify one another. In an empirical study aimed at identifying if SoVC could exist in a virtual community, Blanchard and Markus (2004) asked members of a Usenet-based community why they felt a SoC. Blanchard and Markus concluded that the ability to identify fellow community members “appears to be an important first step” in the development of SoVC (Blanchard & Markus, 2004: 72). Although they felt they had found evidence for the positive case, Blanchard and Markus did not prove the negative case, that is, the possibility that SoVC could exist without member recognition.

Moreover, the positive finding may only apply to certain kinds of virtual community. The community on which Blanchard and Markus based their findings allowed for anonymity. Members could interact without identifying themselves. It was this identifying of themselves and of others that led to a SoVC, Blanchard and Markus concluded. Since members of a Facebook community are identifiable, Recognition as an indicator of SoVC may be insignificant in that type of community. Moreover, Recognition may influence various types of Facebook networks, but not those that are cause-related.

2.6.1.3. Emotional Safety

McMillan and Chavis (1986) described Emotional Safety as part of the broader notion of security. The distinction between Emotional Safety and Security is extremely fine, but the two are treated here as discrete. This is because, as McMillan and Chavis (1986) pointed out, security can be more than emotional. For example, it can be physical. Gangs, for example, provide physical security.

Trust has been added as an element of Emotional Safety. This differs from the framework of McMillan and Chavis (1986), who did not include Trust as a dimension or sub-dimension.

Sense of Security—Diverging slightly from McMillan and Chavis (1986), in this dissertation Security is called Sense of Security. The premise for this is that security will have a significant effect on a SoC only if it is perceived. Moreover, Sense of Security parallels the concept of Sense of Belonging, which McMillan and Chavis (1986) and numerous others justifiably choose to call *Sense of* Belonging rather than merely *Belonging*.

Trust—McMillan and Chavis (1986) linked Emotional Safety strongly to Boundaries but the link with trust is only implied. In contrast, in 1996 McMillan gave far greater weight to the role of trust in engendering a SoC, as have a number of other writers (Blanchard & Markus, 2004; Briones, Kuch, Liu, & Jin, 2011; Moore & Serva, 2007; Valenzuela et al., 2009; Zhang, 2010). Nonetheless, we still lack a full understanding of the role of trust in cause-related virtual communities.

Trust is engendered by community members knowing what they can expect from one another (McMillan, 1996). This requires norms, rules, and laws to be in place (McMillan, 1996). Group norms can be tacit, as is the case among the cause-related virtual communities that are subject of the current study.

Other requirements for trust are having an authority in charge (McMillan, 1996) and members discussing their offline interactions online (Blanchard & Markus, 2004). Furthermore, the degree of anonymity has an influence. Based on findings made by Blanchard and Markus (2004), we can conclude that nonymous (the opposite of *anonymous*) virtual communities engender more trust among members than do anonymous virtual communities. Moreover, we can conclude that the use of members' real names engenders more trust than does the use of pseudonyms. These conclusions warrant confirmation, especially in virtual communities, cultures, and social networking platforms that differ from that investigated by Blanchard and Markus (2004).

2.6.1.4. Sense of Belonging

Sense of Belonging is closely allied to the overarching concept of SoC. Similarly, McMillan and Chavis (1986) treat this element as synonymous with identification. They identify three antecedents of Sense of Belonging, namely, the feeling, belief, and expectation that one fits in the group and has a place there; a feeling of acceptance by the group; and a willingness to sacrifice for the group. The first two of these are tantamount to restatements of the core concept of Sense of Belonging, but the third (willingness to sacrifice for the group) appears to have been deduced in some way. McMillan and Chavis (1986) provided no clarification on how the deduction was made. Nevertheless, it is plausible that SoC results in a willingness to sacrifice for the community.

A point that is apparently more arguable is whether willingness to sacrifice should be seen as an element of the Sense of Belonging. The element could be seen, for example, as an antecedent of Exchange of Support or a sub-dimension of Emotional Connection.

McMillan (1996) reworked Sense of Belonging to refine our understanding of the process of acceptance. In the reworked model, acceptance by a community is a result of faith on the part of the individual. The individual has faith that he or she will be accepted. The community responds to that faith by admitting the individual to membership.

In virtual communities, it is possible to see this process at work in a way that supports the McMillan (1996) model. Computer technical-support communities often, if not always, comprise a mix of veterans and novices. The veterans are the experts. Novices are often nervous about having conversations in these communities. Thus, a novice's post will often start with words to the effect that, "Sorry. I am new here and I don't know much, but can somebody help me with …". This statement implies the newcomer fears rejection but has exercised faith over the fear (he or she is, after all, going ahead with posting a query). The same dynamic is *not* visible in the cause-related virtual communities that are the subject of the current study.

2.6.1.5. Personal Investment

Making an investment plays a large role in developing an emotional connection and in developing a sense of membership to a group (McMillan and Chavis, 1986). Working for membership enables the member to feel he or she has earned a place in the community (McMillan and Chavis, 1986). We do not yet know the extent to which this affects cause-related virtual communities. Personal Investment is also a sub-

dimension of Emotional Connection and is discussed under ‘2.6.5.8. Investment of Resources’.

2.6.1.6. Common Symbol System

A Common Symbol System is a sub-dimension of the McMillan and Chavis (1986) framework. They link this strongly to the creation of boundaries. Thus, symbols and social conventions are used to distinguish between group members and non-members. Examples of these symbols include language, dress, and rites of passage. How this might affect a cause-related virtual community is not immediately apparent. Neither dress nor rites of passage apply to the cause-related Facebook networks that have been observed with respect to the current study. Language may constitute a Common Symbol System but further work is needed to establish if this is so and how it affects SoVC in cause-related virtual communities.

2.6.2. Identity

One motivation for social media use is identity construction. More than one study has found that social network sites are used to construct identity. Elm (2007) and Stern (1999) found this for adolescent girls and (Ellison, Steinfield, & Lampe, 2007) for college students. Hyllegard, Ogle, Yan, and Reitz (2011) found preliminary evidence that students use Facebook and the act of fanning to construct identity. The significance of the Hyllegard et al. (2011) study is partly that it was conducted on consumer-goods Facebook pages. We knew that individuals use social media to construct identity. We did not know if they constructed identity on organisational Facebook pages. Hyllegard et al. (2011) found preliminary evidence that they do.

Social Identity Theory (SIT) deals with the identification individuals have with groups. The key concept of identity is in keeping with the McMillan and Chavis (1986) framework and has a direct bearing on SoVC. Further work is needed to better understand the applicability of SIT to cause-related virtual communities.

2.6.2.1. Social identification

Based on a review of SIT literature, Ashforth and Mael (1989) identified four dimensions of social identification. They are group distinctiveness, prestige of the group, the salience of out-groups, and factors associated with group formation. These are discussed below.

Group distinctiveness—According to SIT, group distinctiveness increases the likelihood of the individual identifying with the group. This has a direct bearing on SoVC in cause-related virtual communities and this is best illustrated with an example. SIT predicts that group identification will be stronger among members of a virtual community for HIV-positive individuals than of a community for those interested in the subject of HIV (HIV-positive individuals being a subset of people who are interested in HIV). According to the McMillan and Chavis (1986) framework, group identification enhances SoVC.

Prestige of the group—The greater the prestige of the group, the greater the social identification. Group prestige is discussed under '2.6.4.4. Collective Self-Esteem'.

Salience of out-groups—Identification is associated with the salience of out-groups. Awareness of out-groups reinforces awareness of one's in-group (Ashforth & Mael, 1989). Typically, virtual communities do not explicitly identify out-groups. SIT predicts that if they did, SoVC would increase.

Factors associated with-group formation—Ashforth and Mael (1989) suggested that factors traditionally associated with group formation may drive group identification. Those factors include interpersonal interaction, similarity, liking, proximity, shared goals or threat, and common history. Of these, McMillan and Chavis (1986) addressed interpersonal interaction, shared goals or threat, and common history. Similarity is implied in the factors of Boundaries and of Shared Values, listed by McMillan and Chavis (1986). Liking is implied in the factor of Shared Emotional Connection. However, McMillan and Chavis (1986) did not address the question of whether other forms of similarity drive SoC. In this dissertation, Similarity is discussed under '2.6.5.11. Similarity' and Proximity under '2.6.5.12. Proximity'.

2.6.2.2. Subgroups identification

The development or presence of subgroups is *not* part of the McMillan and Chavis (1986) framework. In a virtual community of sufficient size, subgroups develop (Blanchard & Markus, 2004; Dholakia et al., 2004). The presence of subgroups may affect SoVC.

Strong ties with a subgroup could plausibly enhance SoVC towards the principal group. The weakening effect on SoVC of increasing community size has already been discussed ('1.5. Delimitations of this study'). It is therefore plausible that, in large communities, subgroup members would feel towards a subgroup a SoVC that they would not have experienced towards the principal group, at least not to the same intensity, and that this subgroup-related SoVC would spill over to SoVC towards the

principal group. Consider the example of a church congregation (the principal group) and the church choir (the subgroup). It is plausible that a strong SoC among choir members would enhance their SoC towards the wider congregation.

On the other hand, subgroups may weaken SoVC towards the principal group. Should that be the case, SIT predicts that the effect is linked to the extent to which the principal and the subgroups differ, particularly along the dimensions that enhance SoVC.

2.6.3. Influence

Influence is one of the four dimensions of the McMillan and Chavis (1986) framework. McMillan and Chavis (1986) described Influence as a sense of mattering to the group and the group mattering to its members. It is the ability to make a difference to the group. It works in both directions: the individual must feel able to influence the group and the group must be able to influence the individual.

Blanchard and Markus (2004) found that Influence did *not* feature prominently among members of a Usenet virtual community, leading them to conclude that Influence plays a lesser role in driving SoVC than SoC. On the other hand, the subject of their study was not a cause-related community and it may be that Influence plays a greater role in virtual communities centred on causes than those centred on other interests. Influence is closely related to group norms and shared values. Group norms did *not* form part of the McMillan and Chavis (1986) framework whereas McMillan (1996) and Blanchard (2008) emphasised their importance in the development of SoC. Part of the reason group norms enhance SoVC is that they allow trust to develop (McMillan, 1996).

McMillan (1996) related group norms to Boundaries. Boundaries determine what may and may not be discussed. We can see this at work in virtual communities. It may be observed that all virtual communities have tacit rules on content and that some, in addition, enforce explicit rules.

McMillan and Chavis (1986) identified a close relationship between Shared Values and Fulfilment of Needs. People with shared values have similar needs and goals, which can be fulfilled by forming a group.

2.6.4. Fulfilment of Needs

Fulfilment of Needs is one of the four main dimensions proposed by McMillan and Chavis (1986). They also referred to this concept as Reinforcement. According to McMillan and Chavis (1986), it involves the feeling that members' needs will be met

by the resources that are provided by the group and that are accessed through membership. McMillan and Chavis (1986) provided a few examples and say there could be many more needs that are fulfilled by SoC. Their examples are Status, Group Success, Interpersonal Attraction, and Collective Self-Esteem. These are discussed in the sections below, with some reordering and additions aimed at enhancing the model. The hierarchy of concepts has been altered, making Status and Group Success elements of Collective Self-Esteem. Furthermore, Information Exchange is added as a sub-dimension.

2.6.4.1. Exchanging Support

Studies have shown the exchange of support to be an essential benefit of some virtual communities (Blanchard & Markus, 2004; Rothaermel & Sugiyama, 2001) and to be a dimension of SoVC (Blanchard, 2008; Blanchard & Markus, 2004; Ellonen, Kosonen, & Henttonen, 2007). One study (Blanchard, 2008) found that just observing the exchange of support enhanced member SoVC. In cause-related virtual communities, the role of exchange of support may depend on features of the network.

2.6.4.2. Information Exchange

A notable form of the exchange of support is Information Exchange. Respondents to the study by Blanchard and Markus (2004) cited Information Exchange as a significant reason they felt a SoVC.

2.6.4.3. Interpersonal Attraction

McMillan and Chavis (1986) presented an incomplete picture of Interpersonal Attraction. The underlying principle of this dimension is that people are attracted to individuals or groups that will benefit them in some way. McMillan and Chavis (1986) made the point that interpersonal attraction seems to be directionless if it has no "directing concepts", one of which is shared values. In this dissertation, Shared Values are treated as a sub-dimension of Identity (see '2.6.2. Identity'). The effect of Interpersonal Attraction on cause-related networks is a matter of speculation. We may suppose, for example, that its role is insignificant, since participants in most networks probably do not know one another well enough to be attracted to one another. On the other hand, it is conceivable that a cause-related network has one or more champions who are recognised and whose values, status, and contribution to the cause are admired.

2.6.4.4. Collective Self-Esteem

Collective Self-Esteem is distinct from personal self-esteem. Collective Self-Esteem is the evaluation of self-worth that arises from membership of a group (Dholakia et al., 2004). The theory that Collective Self-Esteem is a dimension of SoVC is supported by SIT, which says that collective self-esteem is a motivator of social identity and that social identification engenders SoVC (see '2.6.2.1. Social identification').

Barker (2009) found that adolescents with a higher Collective Self-Esteem were more likely to communicate with peer group members via social networking sites. This suggests that Collective Self-Esteem works in tandem with frequency of interaction as a dimension of SoVC. The dimensions of Collective Self-Esteem include group status and group success. We do not yet know if members of a cause-related virtual community experience Collective Self-Esteem.

2.6.5. Emotional Connection

McMillan and Chavis (1986) called this Shared Emotional Connection. The *Shared* qualifier has been removed here in order to accommodate the additional sub-dimension of Immersion, which—on the face of it—can occur without sharing taking place. McMillan and Chavis (1986) called for further research on Emotional Connection because it seems to be "the definitive element of true community."

McMillan and Chavis (1986) identified seven sub-dimensions of Emotional Connection. In the discussion below, Quality of Interaction, Closure to Events, Investment, Effect of Honour and Humiliation, and Spiritual Bond are retained as is. Contact is renamed Frequent Interaction and Shared Valent Event is referred to as Shared History and Crises. To these have been added six sub-dimensions, namely, Offline Interactions, Immediacy, Longevity of the Community, Similarity, Proximity, and Immersion.

2.6.5.1. Frequent Interaction

McMillan and Chavis (1986) hypothesised that the more people interact the closer they become. Köbler et al. (2010) found this to be the case in a study of Facebook status updating. In contrast, Turner (1984) proposed the existence of psychological groups. These groups can exist without interaction between members. If the concept can be found to apply to virtual communities, we could hypothesise that SoVC can exist without frequent interaction. Supporting this conjecture, a study based on a bulletin-board-based virtual community led Ridings and Gefen (2004) to conclude that lurkers

must be considered part of a virtual community. (Lurkers are community members who only look at other members' content, without posting content of their own).

Some caution is needed here. Burke, Marlow, and Lento (2010) found that greater consumption of Facebook content was associated with reduced social capital (of both bonding and bridging types) and with increased loneliness. If consuming Facebook content makes you feel lonelier, it must be antithetical to SoVC. However, the Burke et al. (2010) study established merely an association and was unable to establish cause and effect.

Reconciling these findings and theories, we can theorise that SoVC can exist without frequent interaction on the part of the individual but that such interaction is a positive stimulator of SoVC. This would apply to cause-related virtual communities.

2.6.5.2. Offline Interactions

The role of Offline Interactions needs careful handling, because a SoC arising from offline transactions is, by definition, SoC and not SoVC. Nonetheless, it is likely that SoC engendered in this way stimulates SoVC. Support for this can be inferred from Koh et al. (2007). They clarified why this should be so. They said offline interactions help members of a virtual community understand, trust, and identify with one another. It is known, from findings presented in various parts of the literature review that follows, that these elements engender SoVC. Nonetheless, the effect of this on cause-related virtual communities cannot be assumed. Offline interactions may exist in some cause-related communities and not in others. Therefore, blanket conclusions cannot be drawn without further investigation.

2.6.5.3. Quality of Interaction

McMillan and Chavis (1986) provided little explanation of Quality of Interaction, saying only that the more positive the experience and the relationships, the greater the bond. The implications of a study by Zhang (2010) are that Quality of Interaction will enhance SoVC.

2.6.5.4. Awareness and Connectedness

The awareness that fellow social network members are online enhances a sense of connectedness, a feeling that is closely associated with SoVC (Rettie, 2003; Zhang, 2010). We can infer that immediacy (conversational response with little or no delay) enhances awareness and therefore SoVC. We can speculate that the effect of

immediacy is mediated by the strength of ties between network participants. Immediacy may have little or no effect on SoVC when the participants are strangers to one another (have weak ties). It may only matter when they have some meaningful, if weak, relationship. In other words, if you do not know the people, it may not really matter if they respond immediately rather than after a delay.

2.6.5.5. Closure to Events

McMillan and Chavis (1986) glossed over the sub-dimension of Closure to Events. Group cohesiveness is partly reliant on the resolution of the community's tasks and of the resolution, without ambiguity, of the community's interactions.

2.6.5.6. Shared History and Crises

McMillan and Chavis (1986) referred to Shared History and Crises as a 'shared valent event'. They say community members need not have participated in the shared history but they must identify with it. The more important the shared event, the stronger the bond among community members (McMillan and Chavis (1986). This can be seen among survivors of a shared crisis. Does this play a role in cause-related virtual communities? We do not know. Virtual communities that exist only online (the community has no collective life or activity offline) may lack significant events and such wholly virtual communities may be found among cause-related communities.

2.6.5.7. Longevity of the community

The virtual community must endure if a SoVC is to develop. This is implied in the McMillan and Chavis (1986) factor of Shared History. You cannot have a shared bank of memories if time has not passed. Duration is explicitly alluded to in Rheingold's (1993:7) definition of virtual communities as "social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace". We can reasonably assume this applies as much to cause-related virtual communities as it does to other virtual communities.

2.6.5.8. Investment of Resources

McMillan (1996) reworked the McMillan and Chavis (1986) dimension of Investment of Resources to include 'paying dues'. This replaced the concept of *cognitive*

dissonance spoken of in the earlier model. The term ‘paying dues’ is simpler than *cognitive dissonance* and highlights the two-way nature of the exchange.

In keeping with McMillan (1996), we can describe the exchange as follows: a community opens its doors to a new member; the member thereby feels entitled to the benefits of membership; in return, the community expects the member to pay his dues. These dues typically involve sacrifice and are illustrated by the examples of military service and taxes. Paying dues promotes SoC (McMillan, 1996). The more you invest in a group, the more you are accepted by the group (McMillan, 1996) and that acceptance enhances SoC (McMillan and Chavis, 1986).

Extending the concept to virtual communities, it is more difficult to see the dynamic at work. Facebook-based virtual communities do not require their members to pay membership fees. What dues are then payable? One possibility is participation. We already know that participation engenders SoVC (see ‘2.6.5.1. Frequent Interaction’). A second possibility is disclosure. This is supported by McMillan and Chavis (1986), who considered “intimacy” a form of investment. For a virtual community to require its members to make some form of disclosure is to require a sacrifice (the vulnerability that comes with disclosure), whether this was intended or not. Examples include disclosure of stigmatised sexual orientations (virtual communities for gays or lesbians) or diseases (virtual communities for HIV-positive people).

Time and money are obvious dues that communities may require of members. People who invest time and energy in an association become more emotionally involved (McMillan and Chavis, 1986). In contrast, applying SIT, Ashforth and Mael (1989) theorised that individuals need not contribute to a group’s goals or success in order to identify themselves with the group. They need only perceive themselves as psychologically linked to group. Reconciling these two theories, we can theorise that a SoVC can exist without the investment of resources on the part of the individual but that such investment is a positive stimulator of SoVC.

2.6.5.9. Honour and Humiliation

Rewording McMillan and Chavis (1986), we can say public reward from the community makes the community more attractive. Public humiliation makes the community repellent. McMillan (1996) emphasised the point that effective communities protect their members from shame. There is no obvious reason to think this does not apply to virtual communities. A virtual community, through its leadership and its members, has the means of honouring or shaming its members.

2.6.5.10. Spiritual Bond

McMillan and Chavis (1986) said a Spiritual Bond is present to some degree in all communities. Moreover, in religious communities the Spiritual Bond is the primary purpose of the community's existence. The difficulty in giving shape to this concept can be seen in the McMillan and Chavis (1986) framework, which did little more than identify the concept. Moreover, it explicitly stated, "It is very difficult to describe this important element" (McMillan and Chavis, 1986:14).

2.6.5.11. Similarity

Intra-group Similarity *per se* was not identified by McMillan and Chavis (1986). Nevertheless, they did identify two forms of similarity, namely, the similarities defined by boundaries and the similarities of shared values. Both of these are identified and discussed elsewhere in this framework. Therefore, to reduce the overlap of concepts, the term is used here to refer to similarities *other than* those arising from Boundaries and Shared Values.

In a cause-related virtual community, the remaining similarities can usefully be divided into three types. The first is the inherent similarity arising from identifying with the cause. All of the fans of the Facebook page of the American Red Cross have at least one thing in common, namely, they are all fans of that organisation's Facebook page. This much we know. In addition, we can infer that they are supportive of the work of that organisation, or, at the very least, are neutral. These deductions apply to fans of a page and to participants who are supportive of the cause.

The second type of intra-group similarity is PFC. SIT and the McMillan and Chavis (1986) framework predict that a heightened passion for a cause will engender SoVC among community members. An intense PFC will create a perceptual boundary between the cause-supporters and those who are apathetic about the cause (and boundaries lead to SoVC). A clearly identified passion identifies an individual as a member of the in-group of cause supporters, who can be contrasted with the out-group of those who are apathetic. A shared passion for a cause is a similarity and similarities engender bonding (McMillan, 1996).

The third similarity category is all other similarities. Do further similarities enhance SoVC? To illustrate the question: would a 45-year-old black female nurse feel greater SoVC in a virtual community if the members were in their 40s, female, black, and members of the nursing profession? If they lived in the same country? Spoke the same mother tongue? Enjoyed the same music? Supported the same sport team?

SIT suggests that the answers to these questions are yes. Applying SIT, Ashforth and Mael (1989) concluded that Similarity may be a dimension of identification with a group. McMillan (1996) listed Similarity as an important dimension of group formation and of group bonding. Therefore, Similarity is a dimension of SoVC. Moreover, applying SIT further, we can predict that a group trait that is sufficiently established in the minds of the members is likely to become a group norm and we know that group norms lead to SoVC (Blanchard, 2008; McMillan, 1996). Adding support to this, we can conclude that, if the similarity becomes a norm, it may become a boundary (demarcating who belongs and who does not belong to the group) and boundaries lead to SoVC (McMillan and Chavis, 1986).

2.6.5.12. Proximity

The Proximity of members to one another may engender SoVC, in part because it is a form of similarity. However, the prior work on the role of place in SoC suggests that proximity has an effect that surpasses the effect of mere similarity. It is plausible that physical Proximity engenders SoVC. Chapters of the American Red Cross are location-based and their Facebook pages reflect this geographical orientation. We can infer from what we know of SoC that chapter members have a greater SoVC because of their proximity to one another. However, the effect may be so weak as to be insignificant.

2.6.5.13. Immersion

Citing Hoffman and Novak (1996), Koh and Kim (2003) maintained that Csikszentimihalyi's concept of flow is relevant to virtual communities. Flow is the "holistic sensation that people feel when they act with total involvement" (Csikszentimihalyi, 2000:36). Koh and Kim (2003) argued that anonymity, addictive behaviour, and voluntary behaviour in a virtual community may result in Immersion, a term they treat as synonymous with Csikszentimihalyi's concept of flow (Csikszentmihalyi, 2000). Taking it further, Koh and Kim (2003) included Immersion in their conceptualisation of SoVC and were the first to do so (Blanchard, 2008). The validity of this has been questioned (Blanchard, 2008) and further work is needed to test the applicability of the Koh and Kim (2003) model. It is plausible that Immersion only takes place in extremely high-involvement virtual communities, which are not the focus of this study. Nevertheless, Immersion is included in the framework in the interests of adding granularity to the model.

2.7. Summary of SoVC dimensions

The McMillan and Chavis (1986) framework for SoC became the starting point for much of the subsequent work on SoC and SoVC. Most of the dimensions of SoC identified by McMillan and Chavis (1986) can be shown to be dimensions of SoVC. Subsequent work has been particularly useful in adding granularity to our understanding of those dimensions. This review of the literature has attempted to identify as many dimensions and their sub-dimensions as possible, at the cost of eliminating overlaps between dimensions. Further work, empirical and theoretical, is needed if those overlaps are to be eliminated. The dimensions and their elements, as identified in this review, are listed in Table 2. Dimensions derived from McMillan and Chavis (1986) are flagged as such in the last column. The dimensions and sub-dimensions are depicted graphically in Figure 1. In the figure, strong links between dimensions are represented by dotted lines.

Table 2: SoVC dimensions and their elements

Dimension	Sub-dimension	Sub-sub-dimension	Derived from McMillan & Chavis (1986)
Membership	Boundaries		Yes
Membership	Recognition		
Membership	Emotional safety	Sense of security	Yes
Membership	Emotional safety	Trust	
Membership	Sense of belonging	Expectation of having a place in the community	
Membership	Sense of belonging	Feeling of acceptance	
Membership	Sense of belonging	Willingness to sacrifice	
Membership	Personal investment		Yes
Membership	Common symbol system		Yes
Identity	Identity construction		
Identity	In-group favouritism		
Identity	Group distinctiveness		
Identity	Prestige of the group		
Identity	Salience of out-groups		
Identity	Group formation factors		
Identity	Sub-group identification		
Influence			Yes
Influence	Group cohesion		Yes
Influence	Leadership		Yes
Influence	Group norms		Yes
Influence	Group norms	Shared values	Yes

Dimension	Sub-dimension	Sub-sub-dimension	Derived from McMillan & Chavis (1986)
Fulfilment of needs	Exchanging support		Yes
Fulfilment of needs	Information exchange		Yes
Fulfilment of needs	Interpersonal attraction		Yes
Fulfilment of needs	Collective self-esteem	Status	Yes
Fulfilment of needs	Collective self-esteem	Group success	Yes
Emotional connection	Frequent interaction		Yes
Emotional connection	Offline interactions		
Emotional connection	Quality of interaction		Yes
Emotional connection	Awareness and connectedness		
Emotional connection	Awareness and connectedness	Immediacy	
Emotional connection	Closure of events		Yes
Emotional connection	Shared history and crises		Yes
Emotional connection	Longevity of the community		
Emotional connection	Investment of resources		Yes
Emotional connection	Honour and humiliation		Yes
Emotional connection	Spiritual bond		Yes
Emotional connection	Similarity		
Emotional connection	Proximity		
Emotional connection	Immersion		

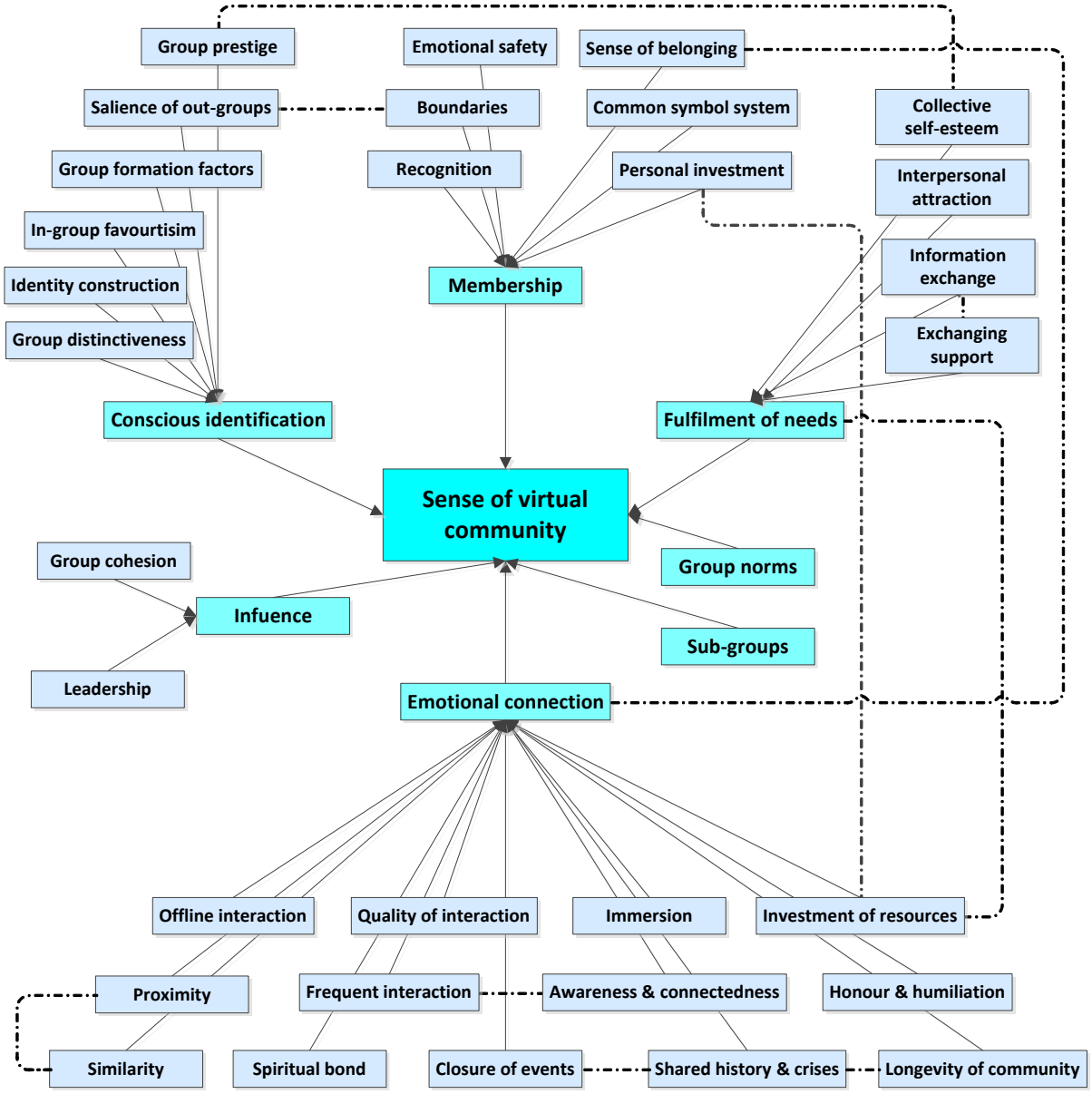


Figure 1: SoVC dimensions and sub-dimensions

2.8. SoVC dimensions in cause-related communities

Studies have investigated SoVC in a wide diversity of virtual community types, such as, listservs and usernet groups (Blanchard, 2008), a sport-related community (Blanchard & Marcus, 2004), social networking sites (Zhang, 2010), and knowledge

sharing (Cho & Jahng, 2014). One aspect that has been investigated is the factor structure of SoVC. This has been done in a variety of contexts. Nevertheless, work on SoVC in a cause-related context is lacking. Thus, we lack empirical evidence informing us whether the latent factors of SoVC in cause-related virtual communities are the same as those for other virtual community types. This leads to the first research question of the current study:

(1) What are the latent factors underlying sense of virtual community in cause-related virtual communities mediated by Facebook?

2.9. Passion for the Cause

Passion for an activity, ideology, person, or object has been found to have psychological benefits (Marsh et al., 2013). On the other hand, an excessive passion can be unhealthy. Thus, the dualistic theory of passion distinguishes between two types of passion, harmonious passion and obsessive passion (Vallerand et al., 2003).

Harmonious passion is a desire to engage freely in an activity associated with the object of the passion. In contrast, obsessive passion involves an involuntary pursuit of the passion, driven by internal or external psychological pressures (Marsh et al., 2013). Thus, harmonious passion is associated with positive outcomes and obsessive passion with negative outcomes. Harmonious passion has been found to enhance motivation and commitment towards the object of passion (Vallerand & Verner-Filion, 2013). This has managerial implications for the cause organisations that are the focus on this study. Also pertinent, the passion construct has been applied to passion for brands (Albert, Merunka, & Valette-Florence, 2013; Swimberghe, Astakhova, & Wooldridge, 2014) and non-profit organisations are also brands. Taken together, these factors suggest that some level of passion on the part of virtual community members can be expected to exist for the causes investigated in this study. Current theory posits that PFC will enhance SoVC, as discussed above (‘2.6.5.11. Similarity’). Correlation or predictive value can inform our understanding of the relationships between the constructs of SoVC and PFC. Thus, the second and third research questions:

(2) Does PFC in this environment predict sense of virtual community?

(3) Does sense of virtual community in this environment predict PFC?

Building on the above, with the aim of enhancing our understanding of these constructs, the factors of SoVC can be usefully applied. The purpose of this is to enrich the model. Thus, we may, for example, find that PFC is predictive of only one or two factors of SoVC. Thus, the fourth research question:

(4) With which of the latent factors of sense of virtual community is PFC most closely associated in this environment?

2.10. Research questions

In summary, the research questions for this study are:

(1) What are the latent factors underlying sense of virtual community in cause-related virtual communities mediated by Facebook?

(2) Does PFC in this environment predict sense of virtual community?

(3) Does sense of virtual community in this environment predict PFC?

(4) With which of the latent factors of sense of virtual community is PFC most closely associated in this environment?

3. Research methodology

This chapter presents broad aspects of the research methodology, including the research philosophy, population, sampling, data collection, ethical considerations, and limitations of the study.

3.1. Research philosophy

According to Burrell and Morgan (1979), social scientists investigate the social world on the basis of a set of assumptions that can be grouped into three types. First, *ontological* assumptions have to do with the nature of reality. Is reality external to the investigator or is it a product of the investigator's consciousness? Second, *epistemological* assumptions are beliefs about how knowledge is obtained and what forms of knowledge can be obtained. Third, assumptions about *human nature* are concerned with the relationship between people and their environments. At one extreme of this third set of assumptions, humans are seen to be products of their environment and at the other they are controllers of the environment (Burrell & Morgan, 1979).

Burrell and Morgan (1979) argue for maintaining the discrete identities of these assumptions. Nevertheless, they unite them into holistic paradigms, which for convenience they call *subjective* and *objective*. The subjective paradigm is characterised by nominalism, anti-positivism, voluntarism, and ideographic methodologies. The objective paradigm is characterised by realism, positivism, determinism, and nomothetic methodologies.

At one level, the nature of the phenomena under investigation in this study imply that the subjective paradigm is the appropriate paradigm. Clearly, both SoVC and PFC exist only in the minds and hearts of human beings. That implies a nominalist ontology, that is, that reality is a product of individual consciousness. This implies epistemological difficulties. The current study attempts to detect and measure psychological characteristics that, at the time of investigation, subjects may not even realise they possess. Moreover, the phenomena under investigation imply that it is human beings who create and control reality. It has been established that people regulate their emotions (Gross, 1998) and we have no reason to believe they cannot do so in the context under investigation.

One approach to this context could have borrowed from the principles of ethnography. By such an approach, the researcher could have joined one or more virtual communities and participated for an extended period. Such direct participation on the

part of the researcher is intended to yield rich detailed insights into the social structures under investigation. Such an approach lends itself to the subjective paradigm, as the researcher's own experience becomes a key source of knowledge.

Notwithstanding the possibilities identified above, this study is rooted in the objective paradigm. The reason for this emerges with a closer look at the nature and location of the phenomena under investigation. The psychological states under investigation are in the minds of the subjects rather than of the investigator. To the researcher, the investigated phenomena are indeed external, and therefore objective. That implies the phenomena can be detected and perhaps measured (an epistemological assumption). Granted, methodological difficulties present themselves, but the assumption underlying this study is that these objective phenomena (psychological states external to the mind of the researcher) can be detected using validated methodologies. Those methodologies include those found in the established discipline of psychometrics.

For completeness, the third set of assumptions identified by Burrell and Morgan (1979) should be addressed, assumptions about the degree of control human beings exercise over their environment. Neither of the two extremes (Burrell & Morgan, 1979) provide satisfactory models. On the one hand, it seems plausible that virtual community participants are indeed influenced by their respective virtual communities, an influence that leads to SoVC and, conceivably, PFC. On the other hand, community participants very likely consciously or unconsciously foster their own SoVC and PFC. For this study, the question of which has the greater influence is *not* germane to the analysis. This may be addressed by future research.

3.2. Research design

A quantitative research design was used to target the users of Facebook pages of South African non-profit organisations promoting health-seeking behaviour or responsible lifestyles. Participants on the targeted Facebook pages were invited to complete an online survey. Respondents were thus self-selected. Although self-selection potentially has a negative impact on research validity, this method of sampling was chosen for its convenience and practicality. The survey instrument was placed online because a considerably higher number of responses were expected from the online format as opposed to face-to-face or even telephonic interviews. This was important because the research design included a factor analysis, which is a statistical procedure requiring a relatively high number of data points (discussed under '4.1.2. EFA methodology'). In addition to factor analysis, this study made use of a series of regression analyses to measure associations between variables. The

suitability of factor analysis and regression analysis for this study are discussed under ‘4.1. Exploratory factor analysis’ and ‘4.2. Regression analyses’.

3.3. Population and sample

3.3.1. Population

A quantitative research design was used to target the Facebook pages of South African non-profit organisations promoting health-seeking behaviour or responsible lifestyles. One of these was Right to Care, the researcher’s current employer. Initially the research design specified including Facebook communities that differed in size from the Right to Care community. This was to account for the possibility that SoVC varies with community size. In summary, the target population can be defined as ‘Facebook users who are active on the Facebook pages of South African non-profit organisations promoting health-seeking behaviour or responsible lifestyles’.

3.3.2. Sample and sampling method

The following summarises key features of the sampling method. A full explanation of the data collection steps is presented under ‘3.5. Procedure for data collection’. For this study, non-probability sampling methods were employed, each of which involved inviting virtual community participants to complete an online survey. Invitations were issued in three ways. The first involved posting the invitation on the Facebook pages of the targeted organisations. Respondents to these invitations were thus self-selected. While not ideal, this method is in keeping with common research practice and, pertinently, has been used in numerous prior studies of social networks (for example, Blanchard, Welbourne, & Boughton, 2011; Curtis et al., 2010; Dholakia et al., 2004; Joinson, 2008; Köbler et al., 2010; Utz, 2009; Zhang, 2010). The second sampling method involved the researcher issuing invitations directly to individuals, using Facebook’s messaging function. The invited individuals were chosen because they had recently participated on the Facebook pages of the targeted organisations. The third method involved a form of social network sampling (also known as *snowball sampling* or *referral sampling*), whereby individuals were asked to invite their Facebook friends to complete the survey.

3.4. Research instrument

The data collection instrument used was an online questionnaire built and deployed on Qualtrics, an online survey platform provided by Wits Business School (https://wits.eu.qualtrics.com). The questionnaire was designed to ensure anonymity. Respondents were not asked to provide their names, identity numbers, or any other unique data, such as cell phone numbers. The questionnaire specified that respondents had to be 18 years of age or older. They were asked to provide a minimum of demographic detail (age and gender). Thereafter, two questions were asked about Facebook use (means of access and frequency of access). Respondents were then asked to indicate their support for cause organisations in each of four categories (the precise wording is presented in Appendix 2). They were asked to indicate which cause organisation they felt most strongly about. The questionnaire then said that the rest of the questions pertained to *that* Facebook page.

The remaining questions comprised two sets, a 22-item scale for SoVC and a six-item scale for PFC. The use of previously validated scales is preferable to the creation of a new scale (Furr, 2011). Thus, the SoVC scale was based on the work of Blanchard (2007) and the PFC scale was based on a scale refined by Marsh et al. (2013). Both scales were appropriate for this study. The Blanchard (2007) SoVC scale was designed to measure the specific construct investigated in this study. Regarding the PFC scale, Marsh et al. (2013) established that the scale was appropriate for a wide variety of activities, including leisure, sport, social, work, and education.

The PFC scale refined by Marsh et al. (2013) comprises two distinct sub-scales, one for harmonious passion and one for obsessive passion. Both sub-scales comprise six items. For this study, only the harmonious passion sub-scale was used. There were two reasons for this: (a) because harmonious passion is more likely to exist among the investigated Facebook communities, and (b) in the light of this, adding an additional six questions to the survey instrument could potentially have reduced response rates while adding little or no depth to the analysis. Both SoVC and PFC scales used in this study are presented in Appendix 1.

3.5. Procedure for data collection

The target was 150 completed survey responses, based on the recommendations of Hair (2010). In the first half of 2013, a dozen South African non-profit organisations were approached and asked for their support for the collection of data. Specifically, they were asked if they would post on their Facebook timelines an invitation to complete the survey. The following organisations agreed to do so: Johns Hopkins

Health and Education in South Africa (operating two Facebook pages of relevance: InterSEXions and Brothers for Life), Love Life, Right to Care, Sonke Gender Justice, and Little Fighters Cancer Trust. In December 2013, these organisations were sent an email that contained suggested wording for the invitation and the URL for the survey instrument.

In a separate step, some organisations had configured their Facebook pages to allow visitors to post on their timelines. On these pages, it was possible to post an invitation to complete the survey. Those pages were CHOC Childhood Cancer Foundation SA (Choc) and Mothers to Mothers. Table 3 lists the organisations included in the survey and the number of likes received (measured at the end of the data collection period, 7 June 2014).

Table 3: Surveyed cause organisations

Organisation	Likes
InterSEXions	108 177
Love Life	23 755
Mothers to Mothers	8 877
Little Fighters Cancer Trust	7 261
Brothers for Life	6 051
Choc	3 441
Sonke Gender Justice	2 667
Right to Care	1 084

Within a month, it became clear that the response rate was wholly inadequate. To remedy this, a series of steps was undertaken aimed at gleaning additional responses (the need to use some of these steps was foreseen in the original research design).

Step 1: Facebook's one-to-one messaging facility (inbox) was used to send messages of invitation to specific individuals. These individuals were active on the Facebook pages under investigation.

Step 2: Two questions were removed (province and city in the demographic section), in an effort to reduce the abandonment rate (by simplifying the survey).

Step 3: Page-specific versions of the questionnaire were created for InterSEXions, Brothers for Life, Love Life, Choc, Little Fighters Cancer Trust, Right to Care, and Sonke Gender Justice. Each questionnaire had its own URL. This made it possible, for example, to send InterSEXions-specific invitations to participants on the InterSEXions Facebook page. The invitation included the URL for the InterSEXions

questionnaire and that questionnaire asked the respondent if he or she was a participant on the InterSEXions Facebook page. If they responded in the affirmative, they were presented with the rest of the questionnaire. These page-specific versions considerably reduced the complexity of the survey, as the respondent no longer had to choose his or her favourite organisation (to which the remaining questions pertained). Moreover, the respondent no longer had to evaluate his or her support for each of four types of cause organisation.

Step 4: A form of viral marketing was used, which put to use some of the functionality provided by Facebook. Facebook allows users to go to the Facebook page of an organisation and when they do so they can see which of their Facebook friends have liked that organisation. Colleagues and work associates of the researcher were approached and asked to use this Facebook feature to send messages to their friends, inviting them to complete the survey. This intervention was moderately effective. Nevertheless, the result of all these efforts was a dataset of only 67 data records.

3.6. Ethical considerations

Ethical considerations are important in research as researchers are morally obligated to protect the rights of research participants. The ethical researcher will, among other considerations, aim to uphold the privacy, confidentiality, and mental and emotional wellbeing of the research participant.

The current study was approved by the research ethics committee of the University of the Witwatersrand, following the university's standard ethics procedures. The need to maintain respondent anonymity was ensured through the design of the research instrument, which did *not* require respondents to identify themselves or to provide identifying personal data. In addition, sensitive personal information was not required by the research instrument. Of relevance to the virtual communities under investigation, respondents were *not* asked to divulge stigmatising health information (such as HIV status). Indeed, they were *not* asked to divulge any personal health information. No deception was involved in inviting participation. Moreover, participants were able to withdraw from the research process at any time.

3.7. Limitations of the study

Social networks mediated by other social networking sites may differ from those mediated by Facebook in ways that affect SoVC. Therefore, caution is needed if the findings of this study are to be generalised to social networks other than Facebook.

Moreover, the nature of the studied cause organisations limits the generalisability of findings. The organisations investigated were all South African and were all within a broad category of health and responsible living. This limits the generalisability of the findings with respect to other causes and other countries.

Furthermore, none of the communities under investigation was larger than 110 000 strong. For this reason, we cannot generalise to larger communities without further evidence. At present, such evidence is lacking, since the SoC theory suggests that, as communities get larger, SoC diminishes. Further research is needed to assess the influence of community size on both SoVC and PFC, and potentially the interaction between the two. Each of these limitations suggests areas into which future research could usefully expand.

Finally, the results of the current study may have been influenced by the self-selected nature of the respondents. Thus, caution is advised in generalising the findings.

3.8. Profile of respondents

The online survey yielded 67 completed responses. No particular demographic profile was required for this study. The resulting respondent set was 58% female and 39% male (figures rounded off, here and following). The mean age was 32, with a median of 29. Gender and age were *not* correlated, Spearman's rho = 0.14, $p = 0.29$, $n = 62$. Frequency of accessing Facebook was high, with 88% of respondents accessing Facebook at least once a day. Of the remainder, 2% were accessing at least once every three days, 5% at least every week, and 1% at least once a month.

The means of Facebook access was dominated by mobile devices, with 79% of respondents accessing Facebook via their mobile phones and 48% using their laptops. For static devices, 28% used a work PC; 22% a home PC; 9% an internet café; and 6% a university PC.

4. Results

This chapter presents the purpose, methodology, and results of an exploratory factor analysis (EFA) used to test for the dimensions of SoVC. Two iterations of the EFA were performed and these are presented in the sequence in which they were conducted. This is followed by a presentation of purpose, methodology, and results of a series of regression analyses aimed at measuring relationships between some of the manifest variables in the dataset and some of the dimensions of SoVC, as detected in the preceding EFA.

4.1. Exploratory factor analysis

4.1.1. Purpose of the EFA

The statistical technique of EFA can be used for one or both of two purposes: (a) to identify the underlying dimensions (factors) of a set of variables and (b) data reduction (Hair, 2010). For this study, the purpose of conducting an EFA was to answer the first research question, “What are the latent factors underlying SoVC in cause-related virtual communities mediated by Facebook?” A successful EFA would allow for the testing of correlations between PFC and factors of SoVC. This would provide greater insights into the relationship between PFC and SoVC than would be the case were SoVC to be treated as a single construct.

4.1.2. EFA methodology

The original intention was to do an EFA on the 22 SoVC items. This was in keeping with the principle that use of a previously validated scale is preferable to creating an *ad hoc* scale (Furr, 2011). The resulting SoVC factors could then have been tested for correlations with the PFC (which would have been collapsed into a single score per respondent). However, the smallness of the dataset prevented the carrying out of an EFA on the 22 SoVC items. A solution to this was found in the fact that the sample size needed for an EFA is a function of the number of manifest variables analysed. This made it possible to avoid the problem of the smallness of the dataset by reducing the 22 items to 13 (by means explained below). With such a reduced set of manifest variables, the dataset met both of two criteria advocated by Hair (2010). First, that the minimum sample size should be 50 and, second, that there should be a minimum of five times the number of observations as the number of variables to be analysed. An item count of 13 was a deliberate choice, aimed at achieving a workable factor structure. The shortening of a scale is an accepted research practice (Furr, 2011).

The reduction from 22 to 13 items was done in four steps. First, four items that Blanchard (2007) had eliminated from her final scale were removed (she had done so because of poor or inappropriate factor loadings and communalities). Second, the Recognition item ("I can recognise the names of most members in this community") was eliminated. This was done on the basis that face validity suggests that, in the context of the Facebook communities under investigation, Recognition plays no significant role (the communities are too large and member participation too irregular for it to be plausible that Recognition occurs). Third, a general benefit item was removed, namely: "I think this community is a good place for me to be a member". This benefit is of such a general and unspecific nature that a wide variety of motives could prompt respondents to answer positively. Such is the uncertainty inherent in this question that its elimination was not expected to be detrimental to the scale. Fourth, the remaining 16 items were reduced, by parcelling, to 13 items.

Parcelling required the identification of three pairs of variables. The choice was made based on the perceived best combination of high correlation between the items (Table 4) and face value. Note that any given item could be included in only one pair. It was therefore not possible to base the pairings on just the correlation coefficients. Take, for example, the variable [22] Means a Lot. This variable has a correlation of over 0.7 with four other variables (and one of which is the highest correlation in the matrix, namely, 0.80). It could, however, be paired with only one.

The three chosen pairs were [22] Means a Lot and [14] Get a Lot Out; [19] Count on to Help and [09] Capable of Solving Problems; and [16] Supported By and [15] Questions Answered. The three pairs had correlations of 0.72, 0.69, and 0.54 respectively, $p = 0.00$ for each. These correlations are high and have excellent face value.

Table 4: Correlation matrix: SoVC variables (16) before parcelling

		[03]	[05]	[07]	[09]	[10]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
[03]	Same Wants	1.00															
[05]	Feel At Home	0.46**	1.00														
[07]	Care What Mb Think	0.00	0.27*	1.00													
[09]	Capable of Solving Problems	0.23	0.54**	0.24	1.00												
[10]	Important To Be Mb	0.40**	0.70**	0.44**	0.41**	1.00											
[12]	Longevity	0.35**	0.25*	-0.02	0.32*	0.35**	1.00										
[13]	Anticipate Reaction	0.29*	0.10	0.34**	0.18	0.16	0.09	1.00									
[14]	Get a Lot Out	0.46**	0.72**	0.32**	0.54**	0.64**	0.42**	0.20	1.00								
[15]	Questions Answered	0.13	0.40**	0.24*	0.37**	0.39**	0.31*	0.16	0.51**	1.00							
[16]	Supported By	0.21	0.62**	0.35**	0.38**	0.48**	0.10	0.10	0.69**	0.54**	1.00						
[17]	Friendship Exist	0.27*	0.55**	0.35**	0.54**	0.61**	0.16	0.31*	0.66**	0.52**	0.67**	1.00					
[18]	Friends Have	0.06	0.34**	0.20	0.45**	0.29*	0.05	0.08	0.45*	0.47**	0.56**	0.55**	1.00				
[19]	Counted on to Help	0.40**	0.61	0.28*	0.69**	0.67**	0.31*	0.23	0.65**	0.36**	0.49**	0.81**	0.42**	1.00			
[20]	Duty to Help	0.26*	0.35	0.36**	0.38**	0.46**	0.15	0.46**	0.38*	0.37**	0.51**	0.55**	0.34**	0.54**	1.00		
[21]	Liking for Community	0.48**	0.66**	0.31*	0.63**	0.73**	0.38**	0.29*	0.73**	0.38**	0.59**	0.69**	0.38**	0.75**	0.60**	1.00	
[22]	Means a Lot	0.47	0.74**	0.47**	0.56**	0.78**	0.26*	0.31*	0.72**	0.42**	0.62**	0.62**	0.38**	0.66**	0.57**	0.80**	1.00

Variable numbers correspondent to numbers in the 22-item scale used by Blanchard (2007).

** p < 0.05; ** p< 0.01; Mb: Member*

Negatively worded questions in the scale needed to be reversed. They were reworded into positive statements and the scores inverted (a 1 became a 7, a 2 became a 6, etc). The resulting scale is presented in Table 5.

Table 5: SoVC reduced scale (13 items)

No.	Variable	Scale item
1	Same Wants	Other members and I want the same thing from this community.
2	Feel at Home	I feel at home in this community.
3	Care What Mb Think	I care about what other community members think of my actions.
4	Important to be Mb	It is very important to me to be a member of this community.
5	Longevity	I expect to stay in this community for a long time.
6	Anticipate Reaction	I anticipate how some members will react to certain questions or issues in this community.
7	General Benefit	I get a lot out of being in this community.
		This community means a lot to me.
8	Support Received	I have had questions that have been answered by this community.
		I have received support from this community.
10	Friends Have	I have friends in this community.
11	Helping	Some members of this community can be counted on to help others.
		If there is a problem in this community, there are members here who can solve it.
12	Duty to Help	I have a duty to help others in this community.
13	Liking for Community	I really like this community.

Mb: Member

Missing data was handled in two ways. First, if the missing value formed part of a parcelled item, the act of averaging the values between the component items eliminated the missing value. Second, if the missing value was in an item that had not been parcelled, the average response value for the item was used. There were 10 cases of this (needing an average value). On the resulting dataset, an EFA was performed, using SPSS 22.

4.1.3. EFA results (13 items)

The data passed two tests of EFA suitability. Bartlett's test of sphericity was significant ($p < 0.000$) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.841, well above the suggested minimum of 0.5 (Kaiser, 1974).

A reasonable result came from using the ‘Maximum likelihood’ extraction method; using Oblimin oblique rotation with Kaiser normalisation; allowing SPSS to choose the number of factors based on an eigenvalue greater than one; and taking 0.35 as the minimum factor loading. This last criterion just met the minimum factor loading of 0.3, stipulated by Hair (2010). However, with these parameters one variable did not load onto any factor. The removal of this variable, [07] Care What Members Think, resulted in an improved model and this is reported on below.

4.1.4. EFA results (12 items)

4.1.4.1. Procedure

The data passed both above-mentioned tests for EFA suitability. Bartlett’s test of sphericity was significant ($p < 0.000$) and the KMO measure of sampling adequacy was 0.856.

Using Maximum likelihood extraction, Oblimin rotation, and allowing SPSS to choose the number of factors based on an eigenvalue greater than 1, produced a three-factor result. The total variance explained was 59.6% (48.6%, 6.6%, and 4.4% for factors 1, 2, and 3 respectively). The scree plot is presented in Figure 2.

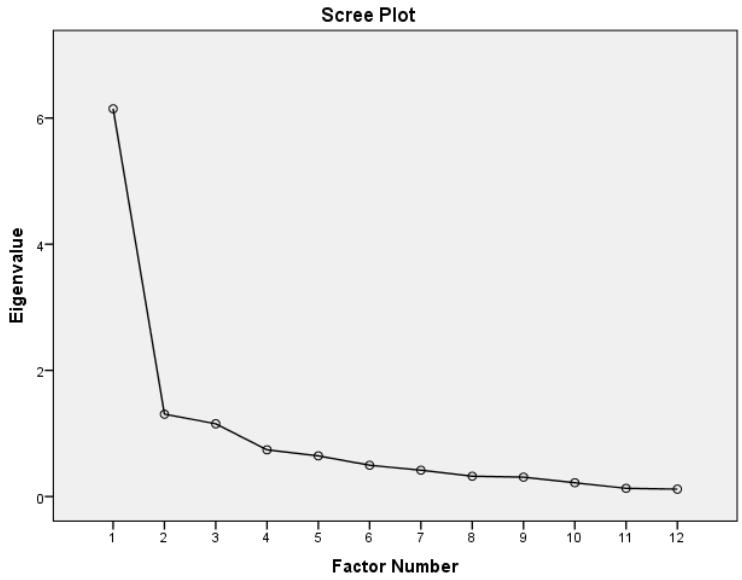


Figure 2: EFA scree plot

The table of communalities (Table 6) showed that all communalities are 0.20 or greater. Although this is on the low side, it is considered adequate for the current study.

Table 6: EFA: Item communalities (12 variables)

Variable	Initial	Extraction
[13] Anticipate Reaction	0.32	0.21
[03] Same Wants	0.39	0.37
[B] Support Received	0.70	0.76
[20] Duty to Help	0.52	0.53
[C] Helping	0.70	0.66
[17] Friendship Exist	0.73	0.75
[18] Friends Have	0.43	0.52
[21] Liking for Community	0.79	0.85
[05] Feel at Home	0.71	0.74
[A] General Benefit	0.84	0.89
[10] Important to be Mb	0.68	0.68
[12] Longevity	0.31	0.20

The resulting structure matrix is presented in Table 7. The pattern matrix is presented in Table 8 with complete loadings and in Table 9 with loadings below 0.4 omitted.

Table 7: EFA: Structure Matrix (12 variables)

Variable	Factor 1	Factor 2	Factor 3
[13] Anticipate Reaction	0.22	0.16	0.46
[03] Same Wants	0.59	0.13	0.31
[B] Support Received	0.53	0.85	0.39
[20] Duty to Help	0.45	0.46	0.70
[C] Helping	0.68	0.50	0.70
[17] Friendship Exist	0.57	0.75	0.68
[18] Friends Have	0.25	0.71	0.35
[21] Liking for Community	0.84	0.52	0.74
[05] Feel at Home	0.81	0.56	0.33
[A] General Benefit	0.89	0.66	0.54
[10] Important to be Mb	0.80	0.49	0.48
[12] Longevity	0.44	0.12	0.24

Table 8: EFA: Pattern Matrix (12 variables)

Variable	Factor 1	Factor 2	Factor 3
[13] Anticipate Reaction	0.00	-0.03	0.47
[03] Same Wants	0.62	-0.15	0.06
[B] Support Received	0.22	0.76	-0.02
[20] Duty to Help	0.08	0.20	0.58
[C] Helping	0.39	0.17	0.44
[17] Friendship Exist	0.16	0.53	0.39
[18] Friends Have	-0.10	0.71	0.12
[21] Liking for Community	0.59	0.13	0.39
[05] Feel at Home	0.78	0.31	-0.19
[A] General Benefit	0.72	0.35	0.04
[10] Important to be Mb	0.70	0.18	0.07
[12] Longevity	0.45	-0.09	0.05

Table 9: EFA: Pattern Matrix; Loadings < 0.4 omitted (12 variables)

Variable	Factor 1	Factor 2	Factor 3
[13] Anticipate Reaction			0.47
[03] Same Wants	0.62		
[B] Support Received		0.76	
[20] Duty to Help			0.58
[C] Helping			0.44
[17] Friendship Exist		0.53	
[18] Friends Have		0.71	
[21] Liking for Community	0.59		
[05] Feel at Home	0.78		
[A] General Benefit	0.72		
[10] Important to be Mb	0.70		
[12] Longevity	0.45		

From Table 9, it can be seen that the 12 items load adequately onto the three factors. Based on the cut-off of 0.4, there are no cross-loadings. In addition, no factor has less than three items. The view taken here is that the factors may be conceptualised as F1 General Benefit, F2 Friendship, and F3 Helping. The pattern matrix with these labels and the items sorted in descending order of factor loadings is presented in Table 10.

Table 10: EFA: Pattern Matrix; 3 factors (12 variables)

Variable	F1 General Benefit	F2 Friendship	F3 Helping
[05] Feel at Home	0.775		
[A] General Benefit	0.724		
[10] Important to be Mb	0.696		
[03] Same Wants	0.623		
[21] Liking for Community	0.591		
[12] Longevity	0.445		
[B] Support Received		0.763	
[18] Friends Have		0.707	
[17] Friendship Exist		0.529	
[20] Duty to Help			0.582
[13] Anticipate Reaction			0.470
[C] Helping			0.443

4.1.4.2. Testing for internal consistency

Tests for internal consistency, using Cronbach's Alpha, showed high scores for each of the three factors. The Cronbach Alpha scores are F1 General Benefit 0.87, F2 Friendship 0.82, and F3 Helping 0.67. Two of these are above the 0.8 level that is generally considered good and one is above the 0.6 level that is generally considered acceptable (Walker & Almond, 2010).

4.1.4.3. Factor scores

A single score per respondent was created for each factor. The score for a factor was the mean of the scores of the variables making up the factor. Looking at the respondents as a set, Table 11 shows the mean and median factor scores for the 67 respondents.

Table 11: EFA mean and median factor scores (12 variables)

Statistic	F1 General Benefit	F2 Friendship	F3 Helping
N	67	67	67
Mean	5.48	5.08	5.09
Median	5.25	5.00	5.17

From the table it can be seen that the mean score for F1 General Benefit (5.48) is higher than those of the other factors (5.09 and 5.08). To put this into context: all SoVC variables were measured using a seven-point Likert format. Therefore, these mean scores show that respondents were on average responding with more 6s and 7s for F1 General Benefit than they were for the variables making up the other two factors.

Interpreting this result, the implication is that respondents have a stronger sense of the community being generally good than is their sense of its specific benefits. Put another way, the average respondent knows the community is good but is less certain about the way in which it is good. This interpretation needs verification through further research. Reliability and validity are addressed in the discussion chapter (5. Discussion).

4.1.4.4. Conclusion

An EFA was conducted to answer the first research question, "What are the latent factors underlying SoVC in cause-related virtual communities mediated by Facebook?" In order to accommodate the smallness of the dataset, the original 22-

item scale was reduced to 13 items. An EFA on the reduced scale showed that one item did not load adequately. This item was removed and an EFA performed on the resulting 12-item scale. The 12 items load adequately onto the three factors. These have been conceptualised as General Benefit, Friendship, and Helping.

4.2. Regression analyses

4.2.1. SoVC and PFC association

Does PFC exist in this environment? We have some evidence that it does. This can be seen in the mean PFC score. If the six variables making up the PFC scale are collapsed into a single variable, the mean score of that variable (n = 67) is 5.6 and the median is 5.8. Those are for a Likert-format range of 1 to 7. Nevertheless, this question cannot be answered with certainty based on the current study, as there is no control group against which to compare the PFC scores. Although answering this question will surely yield useful insights for future research, the lack of certainty on this point is not a hindrance to the current study. The current study examines PFC in relation to SoVC. Establishing the absolute level of PFC or even its level relative to the wider population is not essential to the current analysis.

SoVC and PFC are clearly associated. If the 12 variables making up the SoVC scale are collapsed into a single variable and this is tested for correlation with the collapsed PFC score (described above), the two summated scores are highly correlated, Pearson's r = 0.83 (p=0.000).

We do not know the causality relationship at work here. To deal with this, multiple regression analyses could potentially provide an indication of the direction of the relationship. This section presents the results of two such analyses, with one treating SoVC as a function of PFC and the second adopting the reverse causality. These regression analyses provide answers to the remaining research questions, namely:

(2) Does PFC in this environment predict SoVC?

(3) Does SoVC in this environment predict PFC?

(4) With which of the latent factors of SoVC is PFC most closely associated in this environment?

4.2.2. Regression: PFC independent; SoVC dependent

A single PFC score was calculated, namely, the mean of the six PFC item scores. The reliability of doing this was confirmed by calculating the Cronbach Alpha for the six items. It was very high, at 0.92. Note that this PFC was used in all the analyses that followed (reported on below).

For SoVC a single score was calculated, which was the mean of the three factor scores. This will be referred to hereafter as SoVC (Mean of 3 Factors). In order to improve potentially the predictive power of the model, two demographic variables and seven behavioural variables were included as independent variables.

4.2.2.1. Testing of assumptions

In order to include an independent variable in a multiple regression, it needs to have an appreciable correlation with the dependent variable. A full correlation matrix is presented in Table 12.

Table 12: Correlation matrix: SoVC, PFC, and nine demographic variables

		1	2	3	4	5	6	7	8	9	10	11
1	Age	1.00										
2	Gender	0.14	1.00									
3	FB Frequency	0.13	0.20	1.00								
4	FB Access Café	-0.09	0.00	0.03	1.00							
5	FB Access Home PC	0.37**	-0.15	-0.10	-0.04	1.00						
6	FB Access Laptop	0.03	0.06	0.12	0.01	-0.01	1.00					
7	FB Access Mobile	-0.41	-0.09	-0.16	0.16	-0.34	-0.10	1.00				
8	FB Access University PC	-0.10	-0.05	-0.09	0.14	0.02	0.14	0.13	1.00			
9	FB Access Work PC	-0.02	-0.23	-0.14	0.15	0.30*	0.19	0.08	0.12	1.00		
10	PFC (Mean of 6 Items)	-0.06	-0.16	-0.19	0.06	-0.06	-0.03	0.07	0.24	0.01	1.00	
11	SoVC (Mean of 3 Factors)	-0.02	-0.06	-0.26*	-0.11	-0.07	0.00	0.05	0.00	0.07	0.70**	1.00

Correlation coefficients are Spearman's rho. Binary variables were coded with 0 and 1. FB Frequency, an ordinal variable, was coded 1-6.

**. p < 0.05 (2-tailed).*

***. p < 0.01 (2-tailed).*

From the table, it can be seen that only PFC has an appreciable correlation (0.70, $p = 0.00$) with the dependent variable SoVC. Two other independent variables were found to have low correlations with the dependent variable: FB Frequency (-0.26, $p = 0.04$) and FB Access at Café (-0.11, $p = 0.40$) but their contribution to the model still needed to be tested using a multiple regression. The remaining independent variables have correlation coefficients below 0.08. In the light of the small sample size and the very low level of these correlations, these variables were excluded from the analysis. As a result, the multiple regression reported on below tested three independent variables (PFC, FB Frequency, and FB Access at Café) against the dependent variable SoVC.

For a multiple regression, the independent variables must collectively have a linear relationship with the dependent variable. One way of doing this is visually inspecting a plot of the residuals against predicted values. Such a plot, generated by SPSS, is presented in Figure 3. The plot provides sufficient evidence that the assumption of a linear relationship has *not* been violated (the plots should show a random pattern).

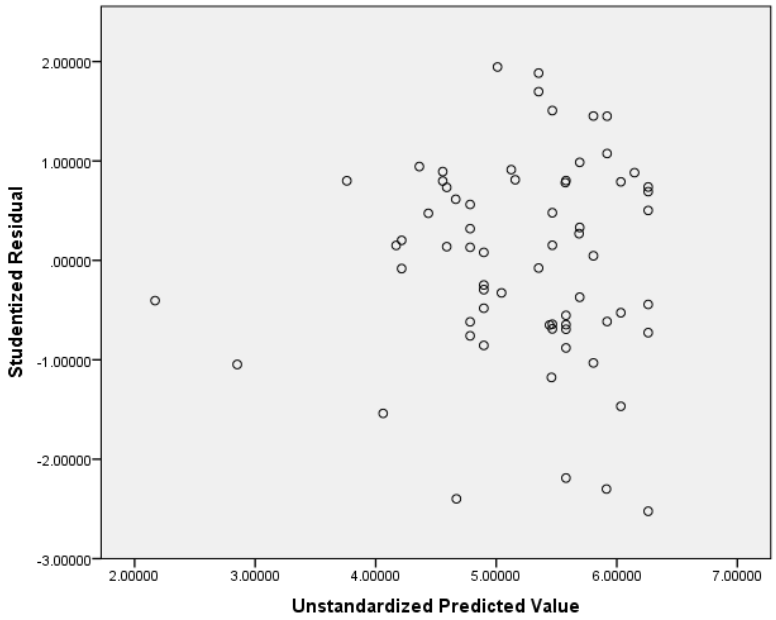


Figure 3: Studentised residuals against unstandardised predicted values (PFC = IV; SoVC = DP)

In addition to the above, for a multiple regression each independent variable should have a linear relationship with the dependent variable. This can be tested by visual inspection of plots for each relationship. Plots generated by SPSS for the three independent variables are presented in Figure 4, Figure 5, and Figure 6.

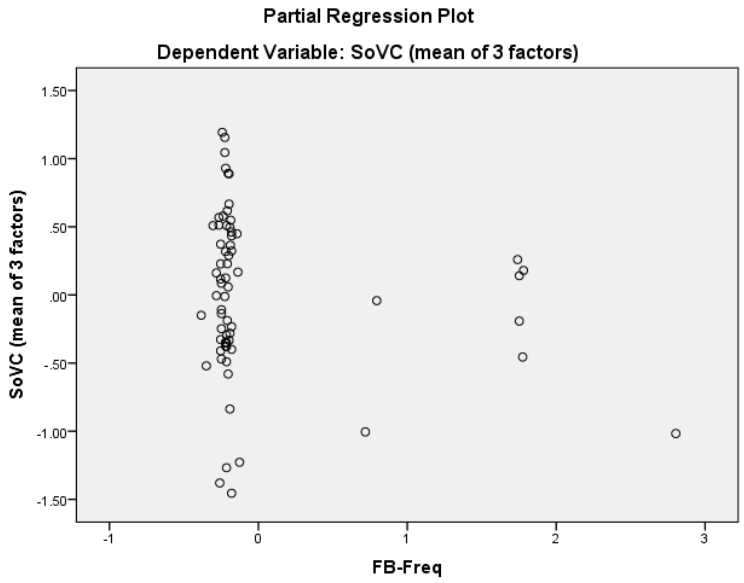


Figure 4: Partial regression plot: FB Frequency and SoVC

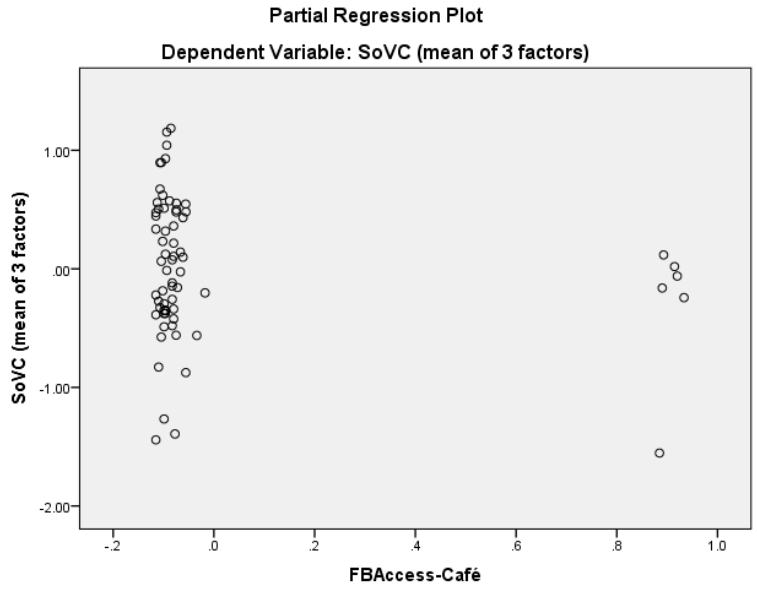


Figure 5: Partial regression plot: FB Access at Café and SoVC

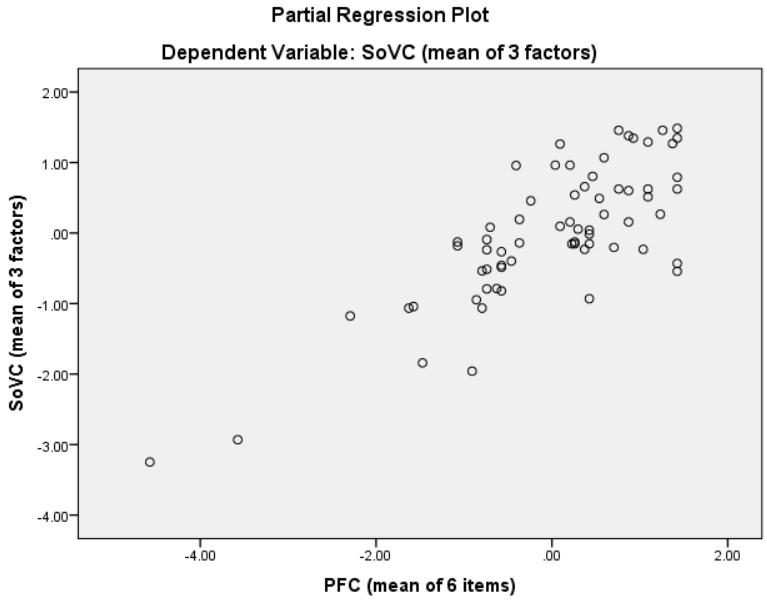


Figure 6: Partial regression plot: PFC and SoVC

These plot results indicate that FB Frequency and FB Access at Café will not contribute adequately to the model. This could be tested by a full multiple regression, results of which are presented below.

The assumptions that need to be met for a multiple regression include homoscedasticity, avoidance of multicollinearity, no outliers, and normality of residuals. Results of tests for the violation of these assumptions are presented below.

Homoscedasticity—Homoscedasticity (homogeneity of variance) could be assessed by visual inspection of the same scatterplot as presented in Figure 3. For convenience, this plot is duplicated in Figure 7.

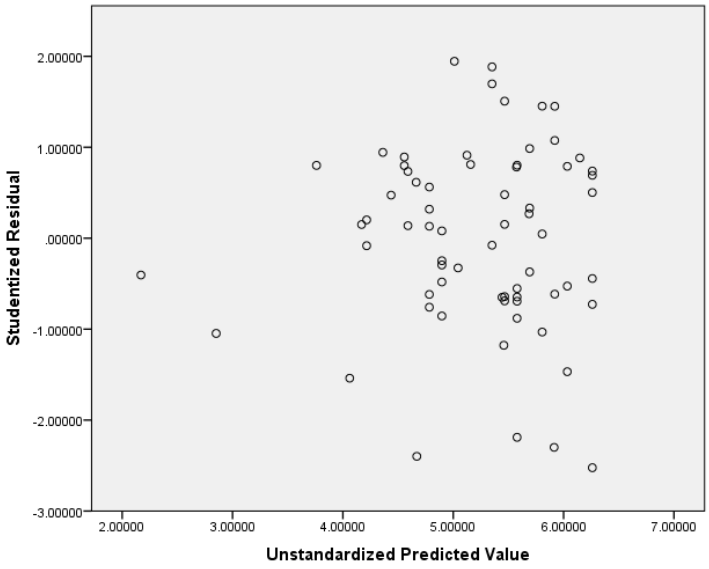


Figure 7: Multiple regression plot: Studentised residuals against unstandardised predicted values

From the plot, it can be seen that the assumption of homoscedasticity has not been violated.

Multicollinearity—Multicollinearity (two or more independent variables being highly correlated) represents redundant data and can result in unreliable regression results. One consequence of high multicollinearity is confidence intervals for coefficients tend to be very wide (Hardy, Berry, Feldman, Fox, & Lewis-Beck, 1993). Multicollinearity can be detected by examining the correlations between the independent variables. One recommendation is that none of the correlations is greater than 0.7 (Husse & Hussey, 1997). Correlations between the independent variables are presented in Table 13. From the table it can be seen that the assumption of the avoidance of multicollinearity has *not* been violated.

Table 13: Correlations between independent variables (3 variables)

		1	2	3
1	FB Frequency	1.00		
2	FB Access Café	0.03	1.00	
3	PFC (Mean of 6 Items)	-0.19	0.06	1.00

p = 0.80, 0.12, 0.66

An alternative test for multicollinearity uses Tolerance values and variance inflation factors. The Tolerance values for FB Frequency, FB Access at Café, and PFC are 0.996, 0.995, and 0.992 respectively. All Tolerance values are required to be greater than 0.1. Variance inflation factors should be less than 10. For the three variables, they are 1.004, 1.005, and 1.008 respectively. Therefore, by either measure, the data met the requirements.

Outliers—Multiple regression is sensitive to outliers. It is advisable to test for these and to deal with them by, for example, removing the outlying data points. For this regression, an outlier was defined as a case with a standardised residual greater than ±3 standard deviations. By this definition, no outliers were detected in the data.

Normality—Multiple regression requires that the residuals be normally distributed. This can be tested using a Normal P-P plot of the standardised residuals. This plot is presented in Figure 8.

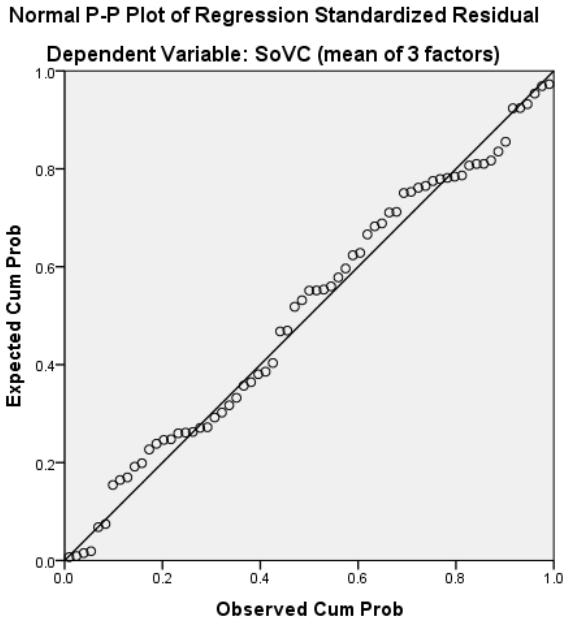


Figure 8: Multiple regression: Normal P-P plot (3 IVs)

The plot indicates that the normality requirement has been met, especially since regression is fairly robust against violations of normality.

4.2.2.2. Results

The results of the regression were an R square of 0.64 and an adjusted R square of 0.63, indicating that the model explains 63% of the variance in the dependent variable. This is an excellent result in the social sciences. On the other hand, FB Frequency and FB Access at Café did not add significantly to predicting the dependent variable, as evidenced by *p* values greater than 0.05 (FB Frequency $p = 0.18$ and FB Access at Café $p = 0.18$). Therefore, these variables needed to be excluded. This was verified by a stepwise multiple regression (reported on below).

To summarise the results of the multiple regression, the independent variables were FB Frequency, FB Access at Café, and PFC. The dependent variable was SoVC. The requirements regarding homoscedasticity, multicollinearity, outliers, and normality of residuals were met. The three variables significantly predicted SoVC, $F(3, 63) = 38.2$, $p = 0.00$, adjusted R square = 0.63. Two of the variables did not contribute to predicting the dependent variable, namely, FB Frequency ($p = 0.18$) and FB Access at Café ($p = 0.18$). Coefficients and standard errors are listed in Table 14. The resulting regression equation is:

SoVC (Mean of 3 Factors) = 1.64 + 0.68 (PFC)

Table 14: Multiple regression: Results

	B	Std. Error	Beta	t	p
(Constant)	1.64	0.40		4.09	0.00
PFC (Mean of 6 Items)	0.68	0.06	0.79	10.50	0.00
FB Frequency	-0.15	0.11	-0.10	-1.34	0.18
FB Access Café	-0.35	0.26	-0.10	-1.35	0.18

B = Unstandardised regression coefficient; Std Error = Standard error of the coefficient; Beta = Standardised coefficient

4.2.2.3. Stepwise regression

To confirm that the two variables (FB Frequency and FB Access at Café) were not making a statistically significant contribution to the model, a stepwise regression was performed. The results confirm that only one variable statistically significantly predicts SoVC, $F(1, 65) = 108.4$, $p = 0.00$, adjusted R square = 0.62. FB Frequency ($p = 0.20$) and FB Access at Café ($p = 0.20$) were excluded. For the remaining variable, PFC, the resulting intercept is 1.42, with an unstandardised regression coefficient of 0.68 (standard error = 0.37, $p = 0.00$). Coefficients and standard errors are listed in Table 15.

Table 15: Multiple regression stepwise: Results

	B	Std. Error	Beta	t	*p*
(Constant)	1.42	0.37		3.83	0.00
PFC (Mean of 6 Items)	0.68	0.07	0.79	10.41	0.00

Figure 9 shows SoVC plotted against PFC, with a regression line overlaid on the plots (graph generated by SPSS).

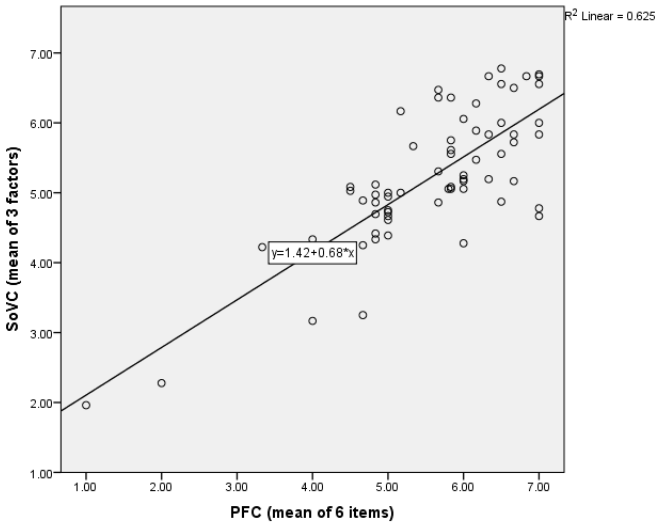


Figure 9: PFC and SoVC plot, with regression line

4.2.3. Regression: SoVC factors independent; PFC dependent

A regression analysis was performed, with the predictive relationship reversed, that is, SoVC taken to be the independent variable and PFC the dependent variable. To be

more exact, SoVC was included in the form of its three factors (F1 General Benefit, F2 Friendship, and F3 Helping).

4.2.3.1. Testing of assumptions

The data met the requirements for a multiple regression, as reported on below.

Homoscedasticity—From the plot presented in Figure 10, it can be seen that the assumption of homoscedasticity has not been violated.

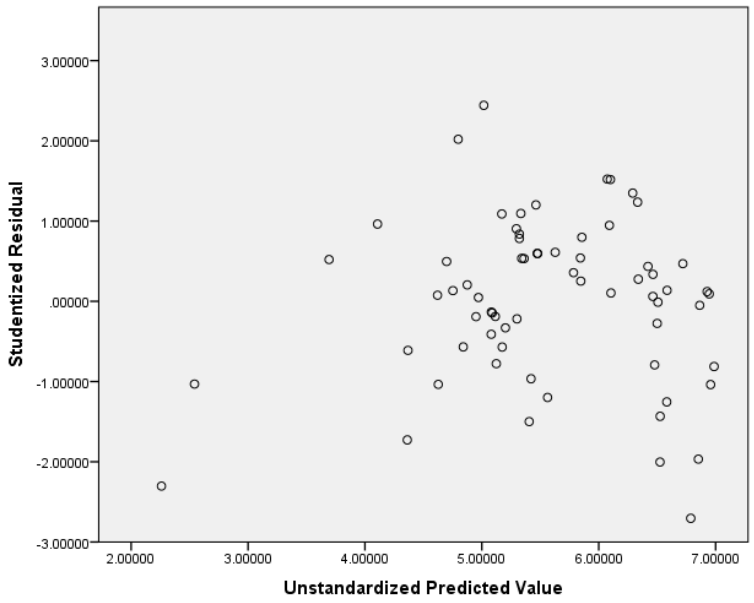


Figure 10: Studentised residuals against unstandardised predicted values (SoVC factors = IVs; PFC = DV)

Linearity—Linear relationships between independent variables and the dependent variable were tested with the plots that are presented in Figure 11 to Figure 13.

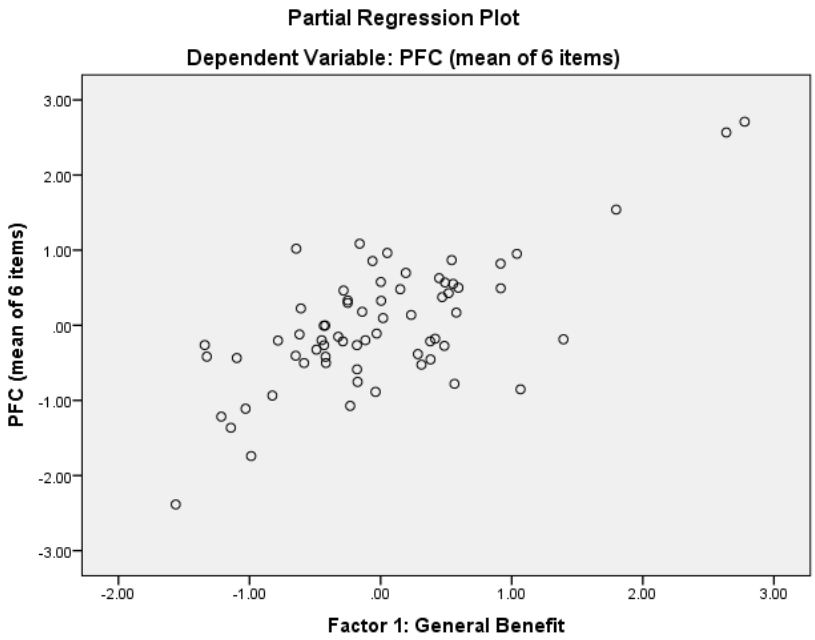


Figure 11: Partial regression plot: F1 General Benefit against PFC

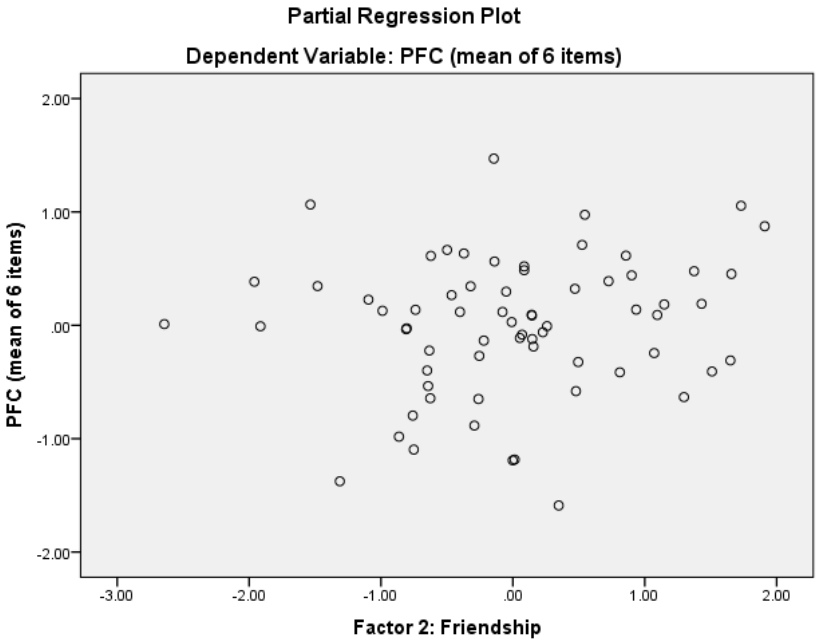


Figure 12: Partial regression plot: F2 Friendship against PFC

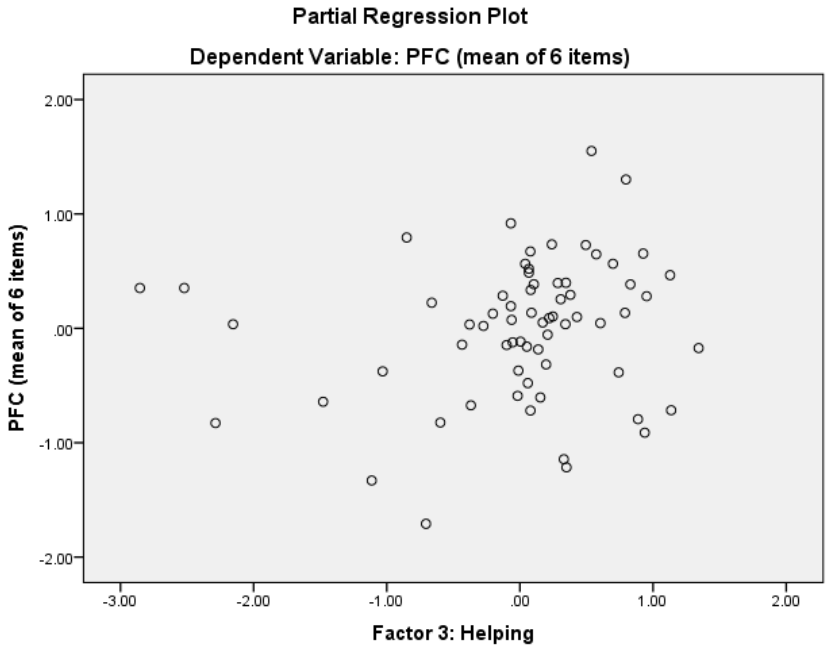


Figure 13: Partial regression plot: F3 Helping against PFC

It can be seen from the plots that Factor 1 has a very strong linear relationship with PFC; that Factor 3 has a weak linear relationship; and that Factor 2 has a poor linear relationship, if at all. Under the assumption that the linearity requirement has been met, the remaining assumptions were tested and a multiple regression was undertaken.

Multicollinearity—Multicollinearity was assessed using the same cut off described above, namely, that correlations should not be greater than 0.7 (Husse & Hussey, 1997). Correlations between the independent variables are presented in Table 16 . From the table it can be seen that the assumption of the avoidance of multicollinearity was *not* violated.

Table 16: Multiple regression: Correlations between independent variables (3 SoVC factors)

	PFC (Mean of 6 Items)	F1 General Benefit	F2 Friendship	F3 Helping
PFC (Mean of 6 Items)	1.00			
F1 General Benefit	0.84	1.00		
F2 Friendship	0.58	0.59	1.00	
F3 Helping	0.61	0.62	0.57	1.00

All $p = 0.00$

The alternative test for multicollinearity involves examining Tolerance values and variance inflation factors. The Tolerance values for the three SoVC factors are 0.54, 0.58, and 0.56 respectively. All Tolerance values are required to be greater than 0.1. Variance inflation factors should be less than 10. For the three factors, they are 1.87, 1.71, and 1.80. Therefore, the data met the requirements, by either measure.

Outliers—As was done with the first regression, an outlier was defined as a case with a standardised residual greater than ±3 standard deviations. SPSS works in such a way that, if there are no outliers as defined by this cut off, the Case was Diagnostics table does not appear in the regression output. This table did not appear; therefore, these data have no outliers.

Normality—Multiple regression requires that the residuals be normally distributed. This can be tested using a Normal P-P plot of the standardised residuals. This plot is presented in Figure 8.

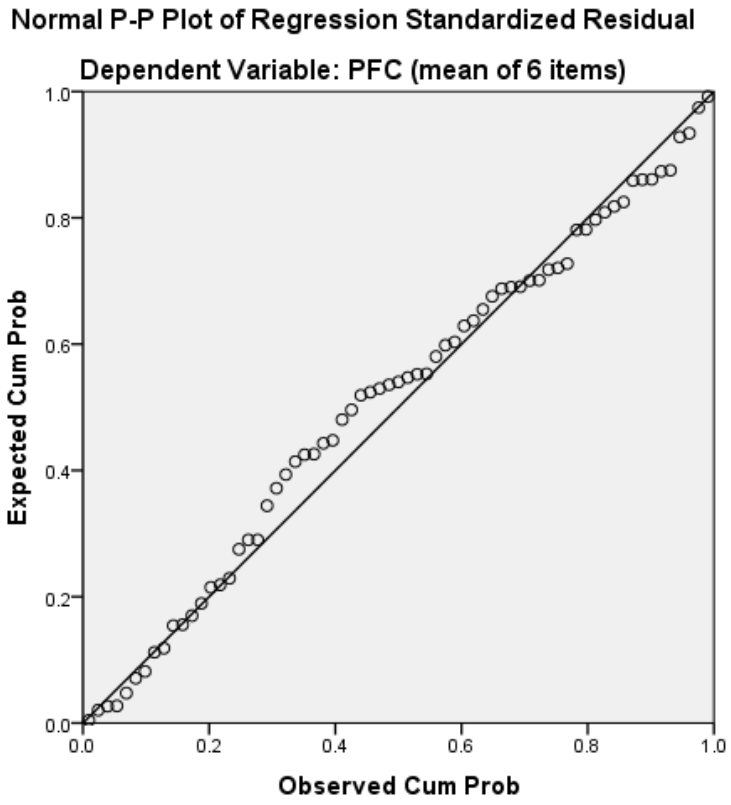


Figure 14: Multiple regression: Normal P-P plot (3 IVs)

The plot indicates that the normality requirement has been met.

4.2.3.2. Results

Pertinent results of the analysis are presented in Table 17.

Table 17: Multiple regression: Results (SoVC factors predicting PFC)

	B	Std. Error	Beta	t	p
Intercept	0.53	0.41		1.28	0.21
F1 General Benefit	0.72	0.09	0.71	7.80	0.00
F2 Friendship	0.09	0.08	0.10	1.11	0.27
F3 Helping	0.13	0.09	0.12	1.36	0.18

B = Unstandardised regression coefficient; Std Error = Standard error of the coefficient; Beta = Standardised coefficient

From the table it can be seen that F2 Friendship and F3 Helping do not significantly contribute to predicting PFC ($p = 0.27$ and $p = 0.18$ respectively). A stepwise regression was used to confirm this. The result was a confirmation that the second and third variables needed to be removed from the model. The remaining variable, F1 General Benefit, had an adjusted R square of 0.70, indicating that the model explains 70% of the variance in the dependent variable. Again, this is an excellent result in the social sciences. Regression coefficients are presented in Table 18.

Table 18: Multiple regression stepwise: Results

	B	Std. Error	Beta	t	P
(Constant)	0.89	0.38		2.30	0.02
F1 General Benefit	0.85	0.07	0.84	12.39	0.00

In summary, a stepwise multiple regression was performed. The independent variables were the three SoVC factors, namely, F1 General Benefit, F2 Friendship, and F3 Helping. The dependent variable was PFC. The requirements regarding homoscedasticity, multicollinearity, outliers, and normality of residuals were met. Two variables, F2 Friendship ($p = 0.11$) and F3 Helping ($p = 0.08$), were eliminated. One variable, F1 General Benefit, remained, $F(1, 65) = 153.6$, $p = 0.00$, adjusted R square = 0.70. The resulting regression equation is:

PFC = 0.89 + 0.85 (F1 General Benefit)

Figure 13 shows F1 General Benefit plotted against PFC, with a regression line (graph generated by SPSS).

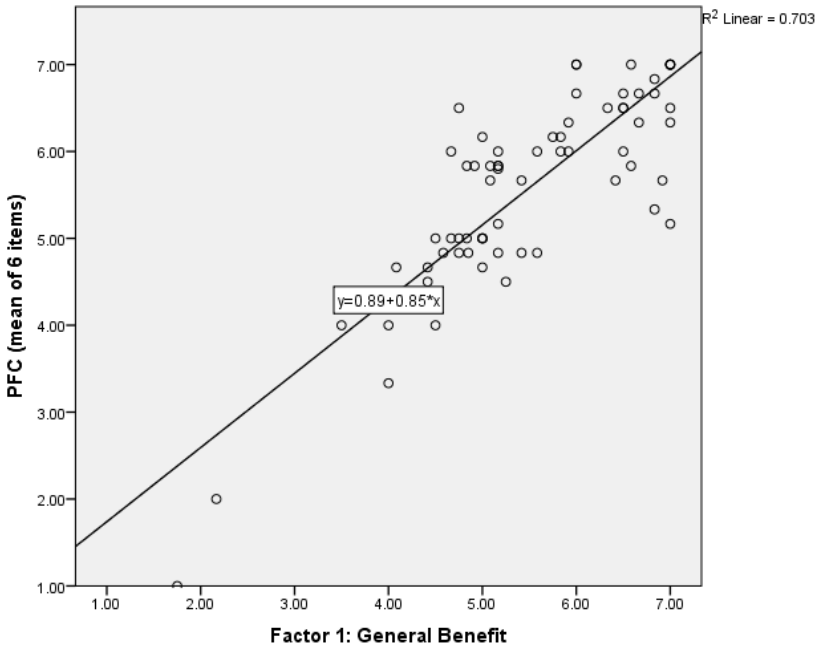


Figure 15: F1 General Benefit plotted against PFC

4.2.3.3. Interpretation

The results tell us that F2 Friendship and F3 Helping do not predict PFC. Taking this further, we can theorise that F2 Friendship and F3 Helping do not enhance PFC. Knowing or believing you have friends in a community is not going to boost your PFC around which that community revolves. The same applies to helping. Knowing that community members help one another gives no impetus to enhanced PFC.

We may theorise further that the F1 General Benefit items have an implied connection with support for the cause. This can be nicely illustrated by rewording some of the SoVC items to imply a connection with the cause. For example, the first item, “I think this community is a good place for me to be a member,” may be reformulated to say, “I think this community is a good place for me to be a member, because it supports the cause”. That statement involves a logical and plausible cause and effect. Another example: the item “I really like this community” can be reformulated as, “I really like this community, because it supports the cause.” Again, the statement shows a plausible cause and effect relationship.

In contrast, doing the same thing to one of the friendship items results in a less plausible link. For example, consider “I have friends in this community.” If this is reformulated in the same way, we get “I have friends in this community, because I support the cause.” This link here is weak at best. It is not likely that a community member will see other community members as friends merely because they support the same cause. Bear in mind that the vast majority of community members of this type of community have never met one another. Friendship seems unlikely in such a context, a conclusion borne out by the low slope coefficient for F2 Friendship (B = 0.09, which can be contrasted with B = 0.72 for F1 General Benefit).

To add theoretical weight to this, consider that the community in this context exists for, and is focused on, a cause. It is reasonable to expect that SoVC measurement items that can naturally be linked to the cause will elicit higher scores from respondents than those items that are perceptually unrelated to the cause.

4.2.4. Regression: SoVC (Single Score) independent; PFC dependent

The results of the multiple regression applying SoVC factors as the independent variables showed only one SoVC factor could be used to predict PFC. Still needed to complete the picture was a regression with SoVC as the independent variable and PFC as the dependent variable. Such a regression was performed, using an SoVC score that was the mean of the three factor scores. This was a simple linear regression.

On a technical note, it could be argued that a more parsimonious model could be attained by using the one SoVC factor, F1 General Benefit, as the independent variable. The results, as reported below, showed that F1 General Benefit and SoVC (Mean of Three Factors) produced very similar results.

4.2.4.1. Testing of assumptions

Linearity—The meeting of the requirement for a linear relationship had already been established in a prior regression. See Figure 6, which is duplicated in Figure 16.

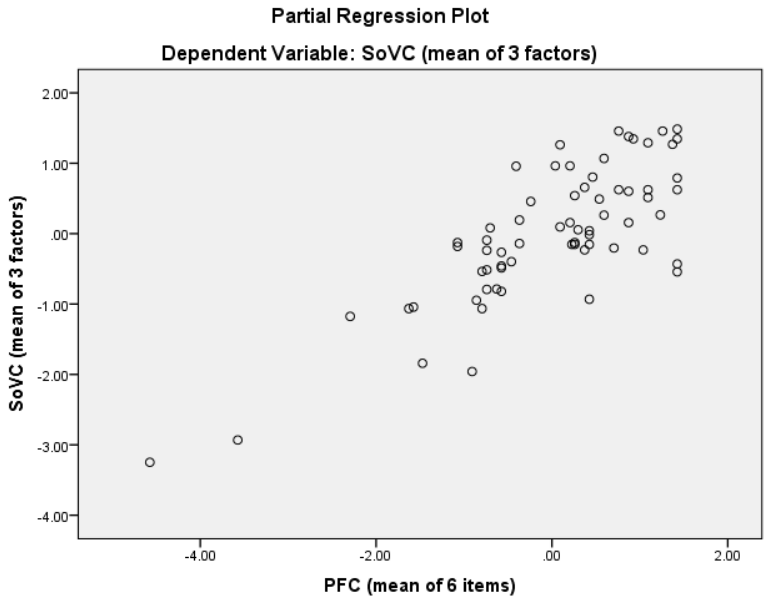


Figure 16: Partial regression plot: SoVC (Mean of 3 Factors) and PFC

Independence of observations—Independence of observations was tested using the Durbin-Watson test, which yielded a value of 1.19. The Durbin-Watson test results in values from 0 to 4, with a result of around 2 being desirable. The result of 1.19 indicates that the observations are not entirely independent.

Outliers—As with the earlier regression analyses, an outlier was defined as a case with a standardised residual greater than ±3 standard deviations. By this definition, no outliers were detected in the data.

Homoscedasticity—The data passed the test for homoscedasticity, as evidenced by Figure 17.

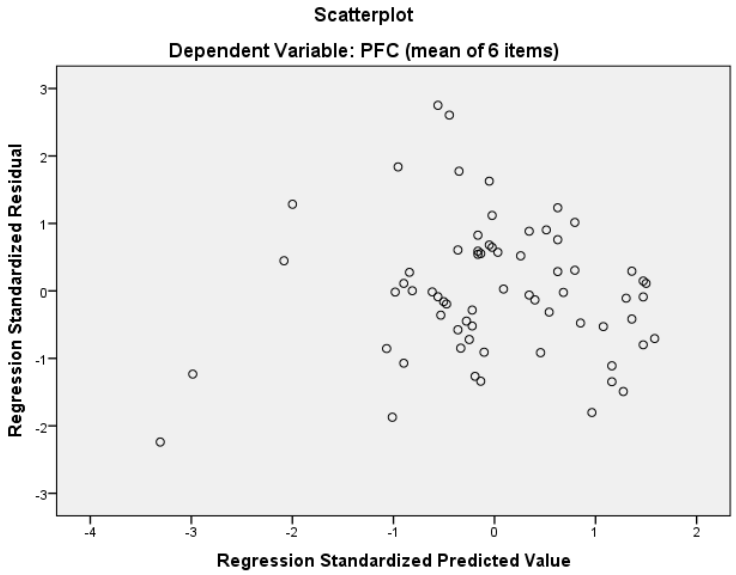


Figure 17: Studentised residuals against unstandardised predicted values (SoVC [Single score] = IV; PFC = DV)

Normality—The data passed the test for normality of residuals, as evidenced in Figure 18.

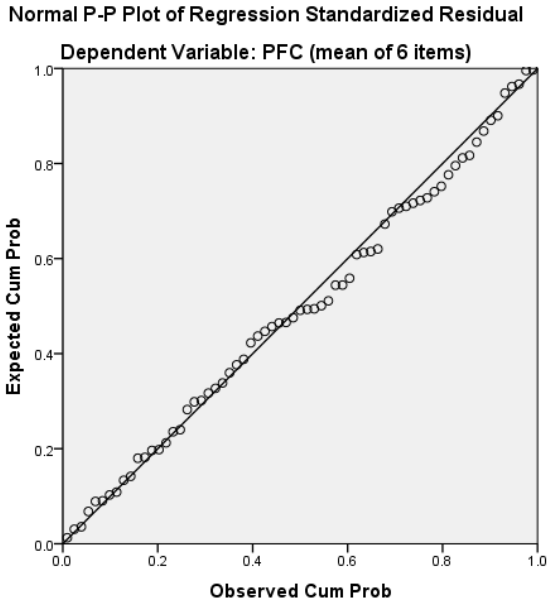


Figure 18: Multiple regression: Normal P-P plot (single IV)

4.2.4.2. Results

The result of the linear regression was to establish that SoVC (Mean of 3 Factors) was able to significantly predict PFC, F(1, 65) = 108.4, *p* = 0.00. The independent variable, SoVC, explained 62% of the variance in PFC (adjusted R square = 0.62). The resulting regression equation is:

PFC = 0.78 + 0.92 (SoVC).

The 95% confidence interval for B is 0.74 to 1.09, as reported by SPSS. Returning to the technical note made above, this confidence interval overlaps almost entirely with the confidence interval for the SoVC factor F1 General Benefit. Therefore, when F1 General Benefit predicts PFC, B = 0.72 (as reported in Table 17), the 95% confidence interval for that B is 0.72 to 0.99 (*p* = 0.00). From this we can conclude that using F1 General Benefit as the independent variable would not have produced a significantly different result from using SoVC (Mean of 3 Factors). Figure 19 shows SoVC (Single Score) plotted against PFC, with a regression line added (SPSS graph).

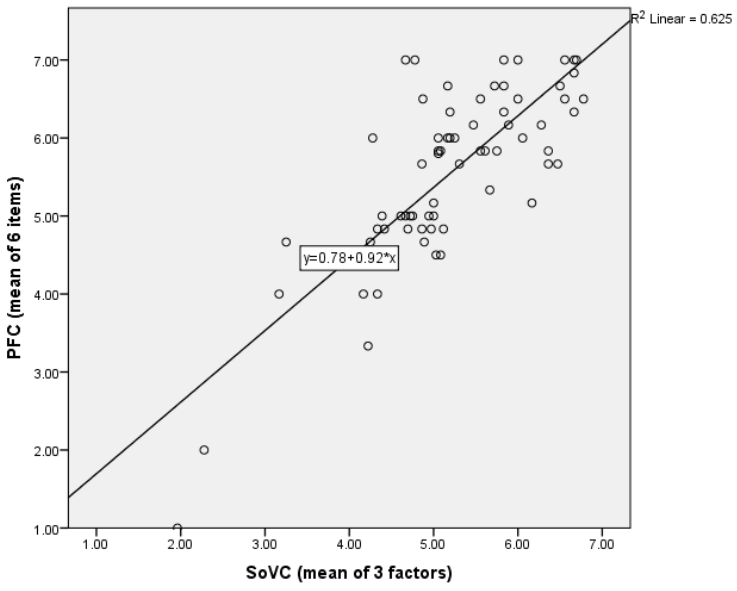


Figure 19: SoVC (Single Score) plotted against PFC

4.2.5. Regression analyses: Results and interpretation

The slope coefficient for PFC predicting SoVC was 0.68. Reversing this relationship, the slope coefficient for SoVC predicting PFC was 0.92. To interpret these results, it

may be theorised that an individual's PFC, no matter how strong, does not necessarily cause that individual to feel a sense of virtual community, even if that community is focused on a cause about which the individual feels passionate.

In contrast, the implication is that a high SoVC leads the individual to develop an enhanced PFC. These are not absolute relationships. A plausible interpretation, arising from the literature, is that it is highly likely that each construct influences the other. Thus, PFC will enhance SoVC and SoVC will enhance PFC. We should not be looking for an either-or structure here. Rather, we can conclude that SoVC has a greater ability to influence PFC than the other way round. Note that we still do not know the causal relationships at work. The theory put forward here requires confirmation by future research. Reliability and validity are addressed in the discussion chapter (5. Discussion).

5. Discussion

In this chapter, the results of the EFA and regression analyses are discussed. The chapter ends with a discussion of validity and reliability.

5.1. Overview

The foundation for this study is the theoretical framework of SoC put forward by McMillan and Chavis (1986). They posited four dimensions of SoC, namely, Membership, Influence, Fulfilment of Needs, and Shared Emotional Connection. Drawing on the literature, the McMillan and Chavis (1986) framework of SoC is applied to virtual communities, resulting in the construct of sense of virtual community (SoVC).

This study examines SoVC in virtual communities mediated by Facebook, specifically in communities constituted around causes. An additional construct is introduced, namely, PFC. An EFA was performed to detect the dimensions of SoVC in this context. This was followed by regression analyses that tested the relationship between PFC and SoVC and between PFC and factors of SoVC.

5.2. Relationships between constructs

The introduction of PFC into the model of SoVC parallels prior work. A number of studies have examined the influence or interaction of various constructs on SoVC (or SoC). Koh and Kim (2003) did this with leaders' enthusiasm, offline activities, and enjoyment. Ellonen et al. (2007) did so with three proposed antecedents of SoVC (needs, similarity with other members, and impersonal trust). Blanchard (2008) introduced identity creation and identity recognition, observing support and posting support, and exchanging email support. (Zhang, 2010) introduced satisfaction with the community. Blanchard et al. (2011) added online trust. Tonteri, Kosonen, Ellonen, and Tarkiainen (2011) examined reading messages and posting messages. Zhao, Lu, Wang, Chau, and Zhang (2012) looked at two participation variables (intention to get knowledge and intention to share knowledge). C. Chen and Lin (2014) did so with system quality, information quality, and social information exchange.

The diversity of constructs that have been brought into models of SoVC suggests that much work can be done on PFC and its effects in the cause-related environment. Models that are more comprehensive will result. An example of such a model can be seen in the work of Blanchard (2008), who found evidence for a relatively complex model in which SoVC comprised five factors, one of which was Norms, and Norms was in turn comprised of four sub-factors. Further work may result in similar multi-layered models for the interaction of PFC and SoVC.

One gap in our knowledge is that we do not know if PFC enhances SoVC in a cause-related environment. Likewise, we do not know if SoVC enhances PFC in this environment. Prior theory predicts that PFC enhances SoVC. On the other hand, it is also plausible that SoVC enhances PFC.

5.3. Factors of SoVC

Scope exists for testing the theorised dimensions (or *factors*) of SoVC in a wider variety of contexts than has been done to date. The current study investigated one such context, namely, cause-related virtual communities. An EFA was performed with the aim of identifying the factors of SoVC in this environment. The purpose was to enhance the model of the effects of SoVC and PFC.

Ideally, the dimensions of SoVC theorised in this study would have been tested empirically. However, the sample size for the current study was too small to allow for this. The limitation of the scale to 12 items allowed for the identification of a maximum of four factors, whereas in this study five factors are theorised (Membership, Identity, Influence, Fulfilment of Needs, and Emotional Connection). This was not an obstacle to the use of an EFA. Since the factors of a construct such as SoVC are context-specific, testing for the factors using an EFA was appropriate for revealing context-specific factors. The results of the EFA provided adequate support for the conceptualisation of three factors of SoVC in this context, namely, General Benefit, Friendship, and Helping.

An analysis of the mean scores for the three factors revealed that General Benefit had a higher mean score for responses (in a seven-point Likert format) than did the other two factors. The mean for General Benefit was 5.48, in contrast to the Friendship mean of 5.08 and the Helping mean of 5.09. Interpreting this result, the implication is that respondents have a stronger sense of the community being generally good than is their sense of its specific benefits. This provides some evidence that the average respondent knows the community is good but is less certain about the way in which it is good.

This study investigated the relationship between PFC and SoVC. The purpose was to gain an understanding of this relationship, should it exist, and specifically to understand the influence these constructs have on one another. Having identified three factors of SoVC, a number of analyses were performed with the intention of understanding the relationship between PFC and SoVC (with the latter being tested both as a single construct and as a construct consisting of three factors).

First, a correlation analysis showed that SoVC and PFC were highly correlated. Knowing that the two were correlated allowed regression analyses to be performed,

with the intention of assessing the predictive capacity of one construct on the other. The first regression treated PFC as the independent variable and SoVC (Mean of 3 Factors) as the dependent variable. In order to improve potentially the predictive power of the model, two demographic variables were included in the regression. The results of the regression showed that these two demographic variables did not contribute to the predictive power of the model and were thus omitted from the analyses that followed. On the other hand, it was found that PFC strongly predicted SoVC (Mean of 3 Factors).

The next analytical step was to assess whether SoVC factors were able to predict PFC. The result of a regression analysis showed that only one SoVC factor, General Benefit, was able to predict PFC with statistical significance. Moreover, an additional regression analysis revealed that SoVC (Mean of 3 Factors) was able to predict PFC with statistical significance.

5.4. PFC effects

Although the current study was not able to expose the interacting effects between PFC and the dimensions of SoVC that were theorised by McMillan and Chavis (1986), the theory provides the basis for useful speculation. That PFC predicts SoVC is in keeping with extant findings on the effects of PFC (Albert et al., 2013; Swimberghe et al., 2014; Vallerand et al., 2003; Vallerand & Verner-Filion, 2013). Moreover, it is plausible that PFC is closely associated with the Collective Self-Esteem (put forward in this study as a sub-dimension of Fulfilment of Needs). The presumed effect here is that support for a cause is altruistic. Altruism makes people feel good about themselves (Myers, Abell, Kostad, & Sani, 2010). If people feel good about themselves in a group context, you have collective self-esteem.

Similarity is another sub-dimension of SoVC that is likely to be associated with PFC (Similarity being included in this study as a sub-dimension of Emotional Connection). According to the McMillan and Chavis (1986) framework, any form of similarity has the potential to contribute towards SoVC.

The SoVC sub-dimension of Personal Investment may have an interacting effect with PFC. According to McMillan and Chavis (1986), the more an individual invests in a community the more likely he or she is to experience SoVC. In the virtual communities under investigation, participating in the discussions of the community is a form of investment of resources (temporal and emotional). To extend the point, the mere act of monitoring the activities of a virtual community is a form of investment. Regarding PFC, there may be a causal link between Personal Investment and PFC (the more you invest, the more passionate you are for the cause).

Finally, it is possible that PFC is associated with Spiritual Bond (regarded in this study as a sub-dimension of Emotional Connection). The difficulty in giving shape to this dimension has been discussed in the review of the literature (see '2.6.5.10. Spiritual Bond'). Although the concept is vague, it cannot be ignored. It is surely likely that members of some cause-related communities have a sense of participating in something higher than themselves and that may provide an adequate foundation for a spiritual bond.

5.5. Summary

In summary, three key findings emerged from the regression analyses. These findings address the research problem, namely, to examine the possible interactions between SoVC and PFC in the specific context of this study. First, that PFC predicts SoVC (Mean of 3 Factors). Second, that the SoVC factor General Benefit predicts PFC. Third, that SoVC (Mean of 3 Factors) predicts PFC. Key findings regarding these are presented in Table 19.

Table 19: Three regression analyses: Results

Independent variable	Dependent variable	Variance explained	Regression equation
PFC	SoVC (Mean of 3 Factors)	62%	SoVC (Mean of 3 Factors) = 1.64 + 0.68 (PFC)
F1 General Benefit	PFC	70%	PFC = 0.89 + 0.85 (F1 General Benefit)
SoVC (Mean of 3 Factors)	PFC	62%	PFC = 0.78 + 0.92 (SoVC (Mean of 3 Factors))

In interpreting these results, we do not know what causality is at work here. Nonetheless, it is likely that the two constructs (SoVC and PFC) mutually influence one another. This is in keeping with the prior theoretical work in both the domains of SoC and of passion. What we do know, from these results, is that PFC is less able to predict SoVC than is SoVC able to predict PFC. Note that a specific factor of SoVC, General Benefit, exerts the main influence in predicting PFC.

This tells us that, if a community member experiences SoVC, he or she is likely to have a positive PFC on which the community is focused. The greater the sense of virtual community, the greater the PFC. The finding is not surprising, in the light of prior work. Meyer and Carey (2014) found that SoVC predicts participation in a virtual community. That suggests, in the absence of empirical evidence, that SoVC would predict PFC, as there is likely a strong association between PFC and participation (Marsh et al., 2013). The finding is what we would have expected, based on the existent literature.

The finding has a potentially useful implication for the administration of cause-related virtual communities. The methodology of the current study did not allow for the detection of causality. Considering two causal possibilities may be of use to community administrators. If SoVC causes PFC, then administrators have a mechanism for engendering support for their causes, namely, enhancing SoVC. If SoVC does not cause PFC but is only correlated with it, administrators may put such a finding to good use. Identifying members with high SoVC might mean that those members can be targeted with more effective solicitations for support. Whether such a strategy is practical or not is beyond the scope of the current study.

5.6. Validity and reliability

5.6.1. Validity

The 12-item SoVC scale used in this study was derived from the 18-item scale developed and tested by Blanchard (2007), and which in turn was a derivation from prior studies. The literature review undertaken for this study yielded no cause to dispute the face validity of the Blanchard scale. We therefore have some evidence for deeming the 12-item scale to have adequate face validity. Indeed, the scale presents no obvious cause to suspect otherwise.

The content validity of the 12-item scale is uncertain. Given that the scale is a reduced version of the Blanchard scale, we cannot be certain that the reduced scale is capable of detecting all aspects of the SoVC construct. The new scale needs further studies to verify this form of validity.

Criterion validity could potentially be measured in this context. We would expect people with high SoVC to participate more actively in the life of the virtual community (Zhang, 2010). A study design that asked individuals to identify themselves would allow participation to be measured (by examining interactions on the relevant cause-related Facebook pages). A correlation between SoVC and participation levels would provide additional support for the construct validity of the SoVC scale. This was not possible with the current study, as survey respondents were *not* asked to provide their names or other identifying data.

For the six-item PFC scale, support for face validity and construct validity were established by Marsh et al. (2013). The current study provides limited support for the discriminant validity of SoVC and PFC (that is, evidence that the two are discrete constructs). The mean inter-item correlation between the 12 SoVC items and the 6 PFC items is 0.45. Future research could provide additional support for discriminant validity in this context.

External validity is the extent to which research findings can be generalised to the target population. Responses obtained for this study may have been affected by common method bias. Specifically, one data collection method was used (the online survey) and it is possible that this introduced a bias in the sample of respondents or in the responses provided. Offsetting this potential for bias, the sampling methods used were likely to have ensured that the survey sample was representative of the target population. The pertinent characteristics include that the respondents had access to Facebook and that they were participating in cause-related Facebook communities. There is no clear or positive reason to infer that the survey sample is not representative of the target population.

5.6.2. Reliability

Regarding the reliability of the current study, test-retest reliability was not measured. We lack evidence to support the reliability of the new 12-point scale for SoVC. Further studies are needed to establish this form of reliability for the current methodology. Tests for internal consistency showed adequate results. The Cronbach Alpha scores for the three SoVC factors were General Benefit 0.87, Friendship 0.82, and Helping 0.67. For PFC, the six items in the PFC scale had a Cronbach Alpha of 0.92.

6. Conclusions and recommendations

This chapter presents conclusions of the study, recommendations, and suggestions for further research.

6.1. Conclusions of the study

This study examines the relationship between SoVC and PFC and, as such, may be the first study of its kind. Evidence was found for a three-factor structure of SoVC and for the presence of high-levels of SoVC in cause-related virtual communities. Preliminary evidence was found for high levels of PFC in cause-related virtual communities. Strong evidence was found for a close association between SoVC and PFC. Finally, the study provides an empirical measure of the predictive capacity of SoVC for PFC and vice versa.

The findings of this study have favourable implications for the operators of cause-related virtual communities. We have here preliminary evidence that SoVC is a powerful tool in the hands of these operators. It is presumably in the interests of these operators to enhance passion for their respective causes. In that respect, SoVC can play a role. First, to be clear, we do not yet know that SoVC engenders PFC. However, this study shows that the presence of SoVC is strongly associated with PFC. It tells us that the individual with a high SoVC in a cause-related virtual community is highly likely to have a high PFC for the relevant cause.

6.2. Recommendations

SoC and SoVC are associated with positive outcomes. Perkins, Florin, Rich, Wandersman, and Chavis (1990) found SoC linked to desirable outcomes in a neighbourhood setting. McCarthy, Pretty, and Catano (1990) found positive outcomes for individual burnout and well-being. Meyer and Carey (2014) found that SoVC predicts participation in a virtual community. We can therefore expect SoVC to lead to positive changes in behaviour.

Even if this were not the case, gains could be made in other ways. Were it possible to measure the propensity of non-members of a community to feel SoVC, those individuals could be targeted to join the community. Among existing members, those members with high SoVC could be targeted to encourage them to become more active in or supportive of the community. An individual with high SoVC and low involvement would be the ideal target for efforts to enhance participation in the activities of the cause organisation. Note, it was beyond the scope of this study to access the practicality of these interventions.

Moreover, this study tells us that, if gain can be made from engendering SoVC, mediators of cause-related communities are likely to make greater gains by emphasising the general benefits of community membership. That is in contrast to friendship benefits or helping benefits.

6.3. Suggestions for further research

Further research is needed to confirm the results of the current study. First, verification is needed of the latent factors of SoVC in a cause-related virtual community. Second, evidence is needed to validate the shortened SoVC scale. Third, further evidence is needed of the discriminant validity of SoVC and PFC (to verify that the two are discrete constructs).

Further research is needed to assess the influence of community size on both SoVC and PFC, and potentially the interaction between the two. In addition, the field of enquiry could productively be expanded. One aspect that could be addressed would involve discriminating between causes. The current study did not do this. Thus, it could be asked, for example, “Does higher SoVC exist in a social network centred on HIV than it does in a network centred on the opposition to women and child abuse?” In addition, it is conceivable that SoVC and PFC can exist in networks mediated by for-profit organisations. Further research is needed to establish this, as the current study investigated cause-related virtual communities.

Aspects of PFC could usefully be examined. Is PFC in this environment greater than it is in the wider population? A negative answer to that question would suggest that cause organisations are wasting their resources in trying to build Facebook communities. Considerable scope exists for testing the association between PFC and the sub-dimensions of SoVC, as presented in this dissertation. As discussed above, PFC may well be associated with Personal Investment, Collective Self-Esteem, Investment of Resources, and Spiritual Bond. These are likely candidates for association. However, this is not to say the other sub-dimensions may not be found to be associated with PFC.

Appendix 1: SoVC and PFC scales

The questionnaire used in the current study included 22 items comprising the sense of virtual community (SoVC) scale and six items comprising the passion for the cause (PFC) scale. The SoVC scale was based on a scale developed by Blanchard (2007), with minor wording changes so that it would match the different context. The PFC scale was based on the harmonious passion scale developed by Marsh (2013), with references to “this activity” replaced by references to “this cause”.

For both scales, respondents were asked to indicate how much they agreed with each statement. Both scales used a seven-point Likert format, with 1 being Strongly Disagree and 7 being Strongly Agree.

SoVC scale

I think this community is a good place for me to be a member.

Members of this community do not share the same values.

Other members and I want the same thing from this community.

I can recognise the names of most members in this community.

I feel at home in this community.

Very few other community members know me.

I care about what other community members think of my actions.

I have no influence over what this community is like.

If there is a problem in this community, there are members here who can solve it.

It is very important to me to be a member of this community.

Members of this community generally don’t get along with each other.

I expect to stay in this community for a long time.

I anticipate how some members will react to certain questions or issues in this community.

I get a lot out of being in this community.

I have had questions that have been answered by this community.

I have received support from this community.

Some members of this community have friendships with each other.

I have friends in this community.

Some members of this community can be counted on to help others.

I have a duty to help others in this community.

I really like this community.

This community means a lot to me.

PFC scale

My support for this cause is in harmony with (goes well with) the other activities in my life.

The new things that I discover in supporting this cause allow me to appreciate it even more.

My support for this cause reflects the qualities I like about myself.

My support for this cause allows me to live a variety of experiences.

My support for this cause is well integrated (fits well) in my life.

My support for this cause is in harmony with other things that are part of me.

Appendix 2: Data collection instrument

The data collection instrument was customised for each cause-related virtual community. This example is the instrument used for Love Life.

Good day

My name is Bruce Conradie, and I am doing a research study for a Masters degree from the University of the Witwatersrand. To get the degree I am required to complete this research project and present an academic paper on the information obtained.

Please help me do this by completing a short questionnaire.

My the way people participate on the Love Life Facebook page. The results are expected to have benefits for non-profit organisations, by enabling them to manage better their social media activities.

To take part in this survey you need to be eighteen years of age or older.

Participation in this research will involve your completing the questionnaire that follows. It will take 8 to 12 minutes to complete.

If you complete the questionnaire, this will be considered consent to participate in the study.

Your participation is completely voluntary and you will not be advantaged or disadvantaged in any way for choosing to complete or not to complete the questionnaire. No identifying information is asked for. You will therefore remain anonymous.

There are no foreseeable risks or benefits to taking part in this study. If you choose to participate in the study, please complete the following questionnaire as carefully and honestly as possible.

A summary of the results will be made available to respondents on request.

The results of the study will be reported in an academic paper, which will be made publicly available.

If you have any questions or concerns, please contact me or my supervisor.

Regards

Bruce Conradie

bruce.conradie99@gmail.com

Tel: +27 83 4614130

Cause-organisations on Facebook survey

Thank you for agreeing to help us with our survey of how people feel about cause organisations on Facebook. All responses to this survey will be treated as totally confidential.

Please answer the following questions (please note that these are in no way meant to be offensive):

Age (in years): [OPEN LINE TO ANSWER]

Gender: Male Female [IN BLOCKS TO CHOOSE ONE]

Please tick the ways you use to access Facebook (tick each one that applies):

Mobile phone

Laptop or tablet computer

Home computer

Work computer

University computer

Internet cafe

Please tick how often you use Facebook (choose one only): [CHECK BOXES SHOWN FOR EACH]

At least once every day

At least once every 3 days

At least once every week

At least once every month

At least once every 3 months or more

The rest of the questions are related to the Love Life Facebook page.

Do you participate on the Love Life Facebook page? [Yes / No]

Thank you very much for your participation in the survey.

The people who participate on the Love Life Facebook page are referred to as "this community" in the questions below.

Regarding the Love Life Facebook page's community, please show much you agree with each statement below by choosing one of the options [A 7-POINT LIKERT SCALE SHOWN FOR EACH STATEMENT, RANGING FROM STRONGLY DISAGREE TO STRONGLY AGREE]

I think this community is a good place for me to be a member.

Members of this community do not share the same values.

Other members and I want the same thing from this community.

I can recognise the names of most members in this community.

I feel at home in this community.

Very few other community members know me.

I care about what other community members think of my actions.

I have no influence over what this community is like.

If there is a problem in this community, there are members here who can solve it.

It is very important to me to be a member of this community.

Members of this community generally don't get along with each other.

I expect to stay in this community for a long time.

I anticipate how some members will react to certain questions or issues in this community.

I get a lot out of being in this community.

I have had questions that have been answered by this community.

I have received support from this community.

Some members of this community have friendships with each other.

I have friends in this community.

Some members of this community can be counted on to help others.

I have a duty to help others in this community.

I really like this community.

This community means a lot to me.

Show how much you agree with the following statements about the cause that Love Life supports [A 7-POINT LIKERT SCALE TO BE SHOWN FOR EACH STATEMENT]

My support for this cause is in harmony with (goes well with) the other activities in my life.

The new things that I discover in supporting this cause allow me to appreciate it even more.

My support for this cause reflects the qualities I like about myself.

My support for this cause allows me to live a variety of experiences.

My support for this cause is well integrated (fits well) in my life.

My support for this cause is in harmony with other things that are part of me.

Do you have any comments to make?

7. References

Abfalter, D., Zaglia, M. E., & Mueller, J. (2011). Sense of virtual community: A follow up on its measurement. *Computers in Human Behavior*.

Albert, N., Merunka, D., & Valette-Florence, P. (2013). Brand passion: Antecedents and consequences. *Journal of Business Research, 66*(7), 904-909.

Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of management review*, 20-39.

Barker, V. (2009). Older adolescents' motivations for social network site use: the influence of gender, group identity, and collective self-esteem. *CyberPsychology & Behavior, 12*(2), 209-213.

Bateman, P. J., Gray, P. H., & Butler, B. S. (2011). Research Note—The Impact of Community Commitment on Participation in Online Communities. *Information systems research, 22*(4), 841-854.

Blanchard, A. L. (2004). Virtual behavior settings: An application of behavior setting theories to virtual communities. *Journal of Computer-Mediated Communication, 9*(2), 00-00.

Blanchard, A. L. (2007). Developing a sense of virtual community measure. *CyberPsychology & Behavior, 10*(6), 827-830.

Blanchard, A. L. (2008). Testing a model of sense of virtual community. *Computers in Human Behavior, 24*(5), 2107-2123.

Blanchard, A. L., & Markus, M. L. (2004). The experienced sense of a virtual community: Characteristics and processes. *ACM SIGMIS Database, 35*(1), 64-79.

Blanchard, A. L., Welbourne, J. L., & Boughton, M. D. (2011). A MODEL OF ONLINE TRUST: The mediating role of norms and sense of virtual community. *Information, Communication & Society, 14*(1), 76-106.

Briones, R. L., Kuch, B., Liu, B. F., & Jin, Y. (2011). Keeping up with the digital age: How the American Red Cross uses social media to build relationships. *Public Relations Review, 37*(1), 37-43.

Burke, M., Marlow, C., & Lento, T. (2010). *Social network activity and social well-being.* Paper presented at the Proceedings of the 28th international conference on Human factors in computing systems.

Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis* (Vol. 248): london: Heinemann.

Burroughs, S. M., & Eby, L. T. (1998). Psychological sense of community at work: A measurement system and explanatory framework. *Journal of community psychology, 26*(6), 509-532.

Chavis, D. M., Hogge, J. H., McMillan, D. W., & Wandersman, A. (1986). Sense of community through Brunswik's lens: A first look. *Journal of community psychology, 14*(1), 24-40.

Chen, C., & Lin, C. (2014). Building a Sense of Virtual Community: The Role of the Features of Social Networking Sites. *Cyberpsychology, Behavior, and Social Networking*.

Chen, G.-L., Yang, S.-C., & Tang, S.-M. (2013). Sense of virtual community and knowledge contribution in a P3 virtual community: Motivation and experience. *Internet Research, 23*(1), 4-26.

Cho, H., & Jahng, J. (2014). Factors affecting the performance of voluntary participants in the knowledge sharing virtual community. *International Journal of Web Based Communities, 10*(3), 339-356.

Csikszentmihalyi, M. (2000). *Beyond boredom and anxiety*: Jossey-Bass.

Curtis, L., Edwards, C., Fraser, K. L., Gudelsky, S., Holmquist, J., Thornton, K., & Sweetser, K. D. (2010). Adoption of social media for public relations by nonprofit organizations. *Public Relations Review, 36*(1), 90-92.

Dholakia, U. M., Bagozzi, R. P., & Pearo, L. K. (2004). A social influence model of consumer participation in network-and small-group-based virtual communities. *International Journal of Research in Marketing, 21*(3), 241-263.

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168.

Ellonen, H.-K., Kosonen, M., & Henttonen, K. (2007). The development of a sense of virtual community. *International Journal of Web Based Communities, 3*(1), 114-130.

Elm, M. S. (2007). *Taking the Girls’ Room Online: Similarities and Differences Between Traditional Girls’ Rooms and Computer-Mediated Ones.* Paper presented at the Inter: A European Cultural Studies: Conference in Sweden 11–13 June 2007.

Furr, M. (2011). *Scale construction and psychometrics for social and personality psychology*: SAGE Publications Ltd.

Goodings, L., Locke, A., & Brown, S. D. (2007). Social networking technology: Place and identity in mediated communities. *Journal of Community & Applied Social Psychology, 17*(6), 463-476.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Review of general psychology, 2*(3), 271.

Hair, J. F. (2010). Multivariate data analysis.

Hardy, M. A., Berry, W. D., Feldman, S., Fox, J., & Lewis-Beck, M. S. (1993). *Regression analysis*: SAGE Publications/Toppan Publishing.

Harrison, S., & Dourish, P. (1996). *Re-place-ing space: the roles of place and space in collaborative systems.* Paper presented at the Proceedings of the 1996 ACM conference on Computer supported cooperative work.

Herzberg, F. I. (1966). Work and the nature of man.

Hillery, G. A. (1955). Definitions of community: Areas of agreement. *Rural sociology, 20*, 111-123.

Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *The Journal of Marketing*, 50-68.

Hughey, J., Speer, P. W., & Peterson, N. A. (1999). Sense of community in community organizations: Structure and evidence of validity. *Journal of community psychology, 27*(1), 97-113.

Husse, J., & Hussey, R. (1997). Business research: a practical guide for undergraduate and postgraduate students. *Basingstock: Macmillan Business*.

Hyllegard, K. H., Ogle, J. P., Yan, R., & Reitz, A. R. (2011). An exploratory study of college students' fanning behavior on Facebook. *College Student Journal, 45*(3), 601-616.

Jin, X. L., Cheung, C. M. K., Lee, M. K. O., & Chen, H. P. (2007). *Factors affecting users' intention to continue using virtual community.* Paper presented at the E-Commerce Technology and the 4th IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services, 2007. CEC/EEE 2007. The 9th IEEE International Conference on.

Joinson, A. N. (2008). *Looking at, looking up or keeping up with people?: motives and use of facebook.* Paper presented at the Proceedings of the SIGCHI conference on Human Factors in Computing Systems.

Jones, Q. (1997). Virtual-Communities, Virtual Settlements & Cyber-Archaeology: A Theoretical Outline. *Journal of Computer-Mediated Communication, 3*(3), 0-0.

Jones, Q., & Rafaeli, S. (2000). Time to split, virtually:'Discourse Architecture'and'Community Building'create vibrant virtual publics. *Electronic Markets, 10*(4), 214-223.

Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education, 58*(1), 162-171.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*(1), 31-36.

Köbler, F., Riedl, C., Vetter, C., Leimeister, J. M., & Krcmar, H. (2010). Social Connectedness on Facebook–An explorative study on status message usage. *AMCIS 2010 Proceedings*.

Koh, J., & Kim, Y. G. (2003). Sense of virtual community: A conceptual framework and empirical validation. *International Journal of Electronic Commerce, 8*(2), 75-94.

Koh, J., Kim, Y. G., Butler, B., & Bock, G. W. (2007). Encouraging participation in virtual communities. *Communications of the ACM, 50*(2), 68-73.

Long, D. A., & Perkins, D. D. (2003). Confirmatory factor analysis of the sense of community index and development of a brief SCI. *Journal of community psychology, 31*(3), 279-296.

Marsh, H. W., Vallerand, R. J., Lafrenière, M.-A. K., Parker, P., Morin, A. J., Carbonneau, N., . . . Guay, F. (2013). Passion: Does one scale fit all? Construct validity of two-factor passion scale and psychometric invariance over different activities and languages. *Psychological assessment, 25*(3), 796.

McCarthy, M. E., Pretty, G. M., & Catano, V. (1990). Psychological sense of community and student burnout. *Journal of college student development*.

McMillan, D. W. (1996). Sense of community. *Journal of community psychology*.

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of community psychology, 14*(1), 6-23.

Meyer, H. K., & Carey, M. C. (2014). In Moderation: Examining how journalists' attitudes toward online comments affect the creation of community. *Journalism Practice, 8*(2), 213-228.

Moore, T. D., & Serva, M. A. (2007). *Understanding member motivation for contributing to different types of virtual communities: a proposed framework.* Paper presented at the Proceedings of the 2007 ACM SIGMIS CPR conference on Computer personnel research: The global information technology workforce.

Myers, D., Abell, J., Kostad, A., & Sani, F. (2010). Social Psychology: European Edition.

Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European journal of social psychology, 15*(3), 263-280.

Obst, P., Smith, S. G., & Zinkiewicz, L. (2002). An exploration of sense of community, Part 3: Dimensions and predictors of psychological sense of community in geographical communities. *Journal of community psychology, 30*(1), 119-133.

Obst, P. L., & White, K. M. (2004). Revisiting the sense of community index: A confirmatory factor analysis. *Journal of community psychology, 32*(6), 691-705.

Perkins, D. D., Florin, P., Rich, R. C., Wandersman, A., & Chavis, D. M. (1990). Participation and the social and physical environment of residential blocks: Crime and community context. *American Journal of Community Psychology, 18*(1), 83-115.

Porter, C. E. (2004). A Typology of Virtual Communities: A Multi-Disciplinary Foundation for Future Research. *Journal of Computer-Mediated Communication, 10*(1), 00-00.

Porter, C. E., & Donthu, N. (2008). Cultivating trust and harvesting value in virtual communities. *Management Science, 54*(1), 113-128.

Proescholdbell, R. J., Roosa, M. W., & Nemeroff, C. J. (2005). Component measures of psychological sense of community among gay men. *Journal of community psychology, 34*(1), 9-24.

Rafaeli, S., Ravid, G., & Soroka, V. (2004). *De-lurking in virtual communities: a social communication network approach to measuring the effects of social and cultural capital.* Paper presented at the System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on.

Rettie, R. (2003). Connectedness, awareness and social presence.

Rheingold, H. (1993). The virtual community: Homesteading on the electronic frontier. *Mass: Addison Wesley, 1*, 993.

Ridings, C. M., & Gefen, D. (2004). Virtual community attraction: Why people hang out online. *Journal of Computer-Mediated Communication, 10*(1), 00-00.

Rothaermel, F. T., & Sugiyama, S. (2001). Virtual internet communities and commercial success: individual and community-level theory grounded in the atypical case of TimeZone. com. *Journal of Management, 27*(3), 297-312.

Shang, R. A., Chen, Y. C., & Liao, H. J. (2006). The value of participation in virtual consumer communities on brand loyalty. *Internet Research, 16*(4), 398-418.

Stern, S. R. (1999). Adolescent Girls' Expression on Web Home Pages Spirited, Sombre and Self-Conscious Sites. *Convergence: The International Journal of Research into New Media Technologies, 5*(4), 22-41.

Swimberghe, K. R., Astakhova, M., & Wooldridge, B. R. (2014). A new dualistic approach to brand passion: Harmonious and obsessive. *Journal of Business Research, 67*(12), 2657-2665.

Tonteri, L., Kosonen, M., Ellonen, H.-K., & Tarkiainen, A. (2011). Antecedents of an experienced sense of virtual community. *Computers in Human Behavior, 27*(6), 2215-2223.

Turner, J. C. (1984). Social identification and psychological group formation. *The social dimension: European developments in social psychology, 2*, 518-538.

Utz, S. (2009). The (potential) benefits of campaigning via social network sites. *Journal of Computer-Mediated Communication, 14*(2), 221-243.

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is There Social Capital in a Social Network Site?: Facebook Use and College Students' Life Satisfaction, Trust, and Participation1. *Journal of Computer-Mediated Communication, 14*(4), 875-901.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., . . . Marsolais, J. (2003). Les passions de l'ame: on obsessive and harmonious passion. *Journal of personality and social psychology, 85*(4), 756.

Vallerand, R. J., & Verner-Filion, J. (2013). Making people's life most worth living: On the importance of passion for positive psychology. *terapia psicolÓgica, 31*(1), 35-48.

Walker, J., & Almond, P. (2010). *Interpreting Statistical Findings: A Guide For Health Professionals And Students: a guide for health professionals and students*: McGraw-Hill International.

Welbourne, J. L., Blanchard, A. L., & Wadsworth, M. B. (2013). Motivations in virtual health communities and their relationship to community, connectedness and stress. *Computers in Human Behavior, 29*(1), 129-139.

Yoo, W. S., Suh, K. S., & Lee, M. B. (2002). Exploring the factors enhancing member participation in virtual communities. *Journal of Global Information Management (JGIM), 10*(3), 55-71.

Zhang, Z. (2010). Feeling the sense of community in social networking usage. *Engineering Management, IEEE Transactions on, 57*(2), 225-239.

Zhao, L., Lu, Y., Wang, B., Chau, P. Y., & Zhang, L. (2012). Cultivating the sense of belonging and motivating user participation in virtual communities: A social capital perspective. *International Journal of Information Management, 32*(6), 574-588.