

**Exploring relational regulation in older persons' mobile phone
use**

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PREFACE

This article was written in accordance with the guidelines for the **Journal of Social and Personal Relationships (JSPR)**, as the chosen research topic is in keeping with the aim and the scope of the journal. The journal is an international peer-reviewed publication with a specific focus on research into social and personal relationships. JSPR has a multidisciplinary scope and draws on research from the fields of social psychology, clinical psychology, developmental psychology, communication and sociology, among others.

This journal was chosen for publication because this article focuses on relational regulation in older persons' mobile phone use. The findings may be applied to gain a better understanding of the concept of relational regulation and the different relational regulation strategies that are employed to address various needs in intergenerational relationships

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First and foremost I would like to give thanks to my **Heavenly Father** who guides my steps. I am eternally grateful for His grace, guidance and unending love.

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Lastly, to the participants in this study, thank you for sharing your views, ideas and stories and allowing me to learn from you. I will always be grateful for this experience.

PERMISSION TO SUBMIT ARTICLE FOR EXAMINATION PURPOSES

The candidate elected to write an article, with the support of her supervisors. I hereby give my permission that this article may be submitted for examination as per requirements of the degree of Master of Arts in Research Psychology.

Prof. Vera Roos

DECLARATION BY RESEARCHER

I hereby declare that this research, **Exploring relational regulation in older persons' use of mobile phones**, is entirely my own work, and that all sources have been fully referenced and acknowledged.

Furthermore I declare that this dissertation has been edited by a qualified language editor.

Finally I declare that this research was submitted to Turn-it-in and that a satisfactory report has been received stating that plagiarism had not been committed.

Sandra Steyn

DECLARATION BY LANGUAGE EDITOR

I hereby declare that I have language-edited the manuscript **Exploring relational regulation in older persons' mobile phone use** by S. E. Steyn submitted in partial fulfilment of the requirements for the degree Master of Arts in Research Psychology

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INTENDED JOURNAL AND GUIDELINES FOR AUTHORS

This article will be submitted to the *Journal of Social and Personal Relationships* (JSPR) for possible publication.

Instructions to Authors

Research Papers

- Include relevant literature, research questions, methods used and results

Manuscript Length: The manuscript must be a maximum of 9000 words, including all elements (title page, abstract additional notes, references, tables and figures), double-spaced and fully justified.

Manuscript Style: The references, citations and general style of the article should be prepared according to the APA Publication Manual (6th edition).

Manuscript Preparation: The manuscript should be submitted in Times New Roman type, font size 10 or 12 point, double-spaced, fully justified and without tabulations or carriage returns between paragraphs.

Cover page: The cover page must contain the following:

- Title of the article in English
- Full names and Surname of each author, followed by the academic centre and the email address of each author.
- Abstracts in English (no more than 250 words). Below the abstract the key words should be a maximum of 8 words.

OPSOMMING

Mobiele tegnologie het die potensiaal om 'n gerieflike medium te word waardeur daar in mense se sosiale doelwitte of psigososiale behoeftes voorsien kan word. Slegs 'n geringe aantal studies het al ondersoek ingestel na verhoudingsregulering, spesifiek hoe ouer mense deur die gebruik van mobiele fone hulle in interaksies met ander mense navigeer om in hierdie behoeftes te voorsien. Hierdie navorsing is van besondere belang indien mobiele tegnologie as 'n alternatief beskou word om inligting oor gesondheidsbevordering aan ouer persone oor te dra, omdat die ouerwordende bevolking in die toekoms eksponensieel toenemend meer druk op gesondheidsorgstelsels en gesinne gaan plaas. Hierdie studie beoog dus om verhoudingsregulering in ouer persone se gebruik van hul mobiele fone te ondersoek. Min kennis rakende die fenomeen bestaan, derhalwe is 'n kwalitatiewe studie uitgevoer op 19 deelnemers (17 dames; 2 mans), wat 60 en ouer is, wat toegang gehad het tot 'n mobiele foon en verskillende sosio-ekonomiese vlakke verteenwoordig het, volgens die Living Standard Measurement-skaal (LSM). Die Mmogo-method®, 'n visuele data-insamelingsmetode is gebruik om deelnemers se persoonlike en ook die groep se ervarings te bekom rakende hoe hulle mobiele fone gebruik. 'n Sekondêre analise van die tekstuele en visuele data is uitgevoer deur tematiese en visuele analise om spesifiek op verhoudingsregulering te fokus. Bevindinge het drie sleuteltemas aan die lig gebring: Eerstens het deelnemers verskeie sosiale doelwitte en psigologiese behoeftes geïdentifiseer, soos die behoefte aan hulp met betrekking tot die vervulling van instrumentele ondersteuning en die behoefte aan kontak met geliefdes. Tweedens is verhoudingsregulering afhanklik van die deelnemers se subjektiewe assessering van hul eie bevoegdheid wat bestaan uit houdings, kennis en vaardighede met betrekking tot hul gebruik van 'n mobiele foon. Derdens wend deelnemers, op grond van hulle subjektiewe evaluering van hulle bevoegdheid, vier reguleringstrategieë aan in verhouding tot ander mense om hulle behoeftes deur middel van hulle mobiele fone te navigeer. Hierdie

reguleringsstrategieë is (a) die onafhanklike gebruik van die mobiele foon, (b) uitstel van behoeftebevrediging, (c) direkte hulpverleningsversoeke gerig tot jonger mense as 'n opdrag; en (d) die aanwending van implisiete onderhandelingsstrategieë om hulle selfone aan jonger mense beskikbaar te stel in ruil vir hulp. Die identifisering van hierdie vier verhoudingsreguleringsstrategieë wat ouer persone wat hul mobiele fone gebruik, dra by tot die literatuur oor verhoudingsregulering. Die bevindinge van hierdie navorsing kan gebruik word om op die bestaande kennis voort te bou en kan dien as rigtingwyser om soortgelyke studies in verskillende kontekste te doen. Aangesien hierdie studie uitsluitlik op ouer persone se verhoudingsinteraksies met die jonger geslag gefokus het, word aanbeveel dat toekomstige studies op jonger persone se verhoudingservaringe met ouer persone rakende mobiele fone fokus om die jonger persone se gewilligheid om ouer persone te help om in hulle behoeftes te voorsien, te ondersoek.

Sleutelwoorde: Intergenerasionele verhoudings; ouer persone; mobiele fone; Mmogo-method®; self-regulering; verhoudingsregulering

SUMMARY

It has been suggested that mobile technology has the potential to become a convenient medium to address people's social goals and psychological needs. Limited studies have explored relational regulation, particularly how people navigate themselves in interacting with others to address their needs by using mobile phones. This research is particularly important if mobile technology is considered an alternative to provide in the care needs of older people, because the older growing populations will place exponentially more pressure on health care systems and families. This study therefore aims to explore relational regulation in older persons' use of their mobile phones. Since very little is known about the phenomenon, a qualitative study was conducted involving 19 participants (17 females; 2 males), aged 60 and older, who had access to a mobile phone, and who represented different socio-economic levels according to the Living Standard Measurement (LSM) scale. Data were obtained by means of the Mmogo-method®, a visual data-collection method that was used to explore older people's personal and group experiences in relation to how they use their mobile phones. A secondary analysis of the textual and visual data was conducted by using thematic and visual analysis to focus specifically on relational regulation. Findings revealed three key themes: First, participants identified various social goals and psychological needs, such as the need for assistance in relation instrumental support and the need for contact with loved ones. Second, relational regulation is dependent on the participants' subjective assessment of their own attitudes, knowledge and skills (competence) to use a mobile phone. Third, participants use four relational regulation strategies in relation to their mobile phones based on their subjective assessment of their competence. These relational regulation strategies are: (a) independent use of the mobile phone to regulate the environment; (b) postponement of need gratification; (c) asking for assistance by instructing

younger people; and (d) applying implicit negotiation strategies such as using the mobile phone in exchange for assistance. The identification of these four relational regulation strategies that are employed by older persons who use their mobile phones contributes to the literature on relational regulation. The findings of this research may be used to build on the existing knowledge of relational regulation, and to guide similar studies in different contexts. As this study focused solely on older persons' relational interactions with the younger generation, it is suggested that future studies focus on younger persons' relational experiences with older persons regarding mobile phones and the younger generation's willingness to assist older persons to address their needs.

Keywords: Intergenerational relations; older persons; mobile phones; Mmogo-method®; relational regulation; self-regulation

INTRODUCTION AND BACKGROUND

This study forms part of an overarching study, *An exploration of enabling contexts*, and the sub-study Intra/InterGenerational Networks through Information Technology (IGNITe), which aims to explore older persons' usage patterns of mobile technology (mobile phones) and how intra/intergenerational relationships are mitigated or limited by the use of mobile phones. Data to address this broader research goal of the sub-study were gathered by means of a multi-phase data collection method utilizing a convergent parallel mixed-method design, whereby quantitative and qualitative data were obtained. The quantitative component comprised an IGNITe questionnaire (n=125) (Hoffman, Roos, Stols, & Bohman, 2015) for the purpose of gathering data on the user patterns in older persons' mobile phone use. Qualitative data were gathered by means of semi-structured interviews (n=23), group interviews (n=10) (Hoffman et al., 2015) and the Mmogo-method® (n=19) (Roos, 2008, 2012, in press-a). The qualitative data revealed different themes, for example agency, self-regulation and the importance of relationships in older persons' use of their mobile phones. It was therefore decided to conduct a secondary analysis of the relational interactions using qualitative data that were collected by means of the Mmogo-method®, which essentially emphasises personal and group experiences (Roos, in press-a). In addition, the method may be used to ask the same research question in different contexts in which people find themselves (Puren & Roos, in press). The self-constructed visual representations the method offers were analysed to investigate how older persons regulate their relationships by using mobile phones to satisfy their social goals or psychological needs. The aim of this introduction and background is to orientate the reader regarding the literature relevant to the study, to define key constructs, and to explain the research procedure and the methods used.

Contextualising the Study

The world as a whole, including sub-Saharan Africa (SSA), has observed its populations ageing and there has been some debate on how this will impact on communities (Apt, 2012). Globally it is estimated that the number of older persons will almost triple from 841 million in 2013 to approximately 2 billion older persons in 2050 (United Nations, 2013). In South Africa 5% of the estimated population of 58.7 million, are over the age of 60 (Population Reference Bureau, 2014). In South Africa, a developing country, the impact of population ageing, which gives cause for concern, is largely the result of disparities created as a legacy of Apartheid. For example, today not all older persons have access to residential care facilities, or had opportunities in their productive years to prepare for financial security for their old age due to job reservation and discrimination during Apartheid (Lombard & Kruger, 2009; Krout, 2014). Furthermore, governments globally, including the South African government, do not have sufficient resources to address the various care needs associated with ageing (Bowes & McColgan, 2013), and are looking increasingly to families to address the care needs of older people (Aboderin & Hoffman, 2015; Keating, Eales & Phillips, 2013).

In the South African context, as elsewhere in many African communities in which family and community boundaries are often fused, the care needs will consequently become the responsibility of younger people, either related, or unrelated to, older people (Aboderin & Hoffman, 2015). Also, as a result of the specific socio-political history of South Africa, many communities do not have sufficient resources – financially or otherwise – to address older persons' care needs of older persons related to age-declining ill-health (Aboderin & Hoffman, 2015). Care in the context of ageing refers to tangible care (physical, instrumental or financial) or intangible care (empathy, compassion and support) that occurs in specific reciprocal relational interactions (Oosthuizen, 2014; Roos & Du Toit, 2014; Ryff & Singer,

2002). The exploration of other avenues that could assist older persons to remain self-sufficient within their living environments for as long as possible is a thus a priority.

Mobile phones have been proposed globally and in the African context as a suitable option in view of the deep penetration of this form of communication in Sub-Saharan Africa (SSA) (Melenhorst, Rogers, & Caylor, 2001). Mobile technology has become an affordable and widely available instrument that can assist older persons in their growing physical, emotional and social care needs, especially in a developing world context. Therefore, not surprisingly, it is regarded as a feasible option for implementing interventions to provide information, to promote the health of older persons or to address their physical care needs (Arif et al., 2014; Goodall, Ward & Newman, 2010; Hoffman, 2014; Knodel & Chayovan, 2012; Melenhorst, et al., 2001). Many of these interventions were planned and implemented, however, without an exploration of older persons' mobile phone user patterns. Although some studies indicated that mobile technology, which includes mobile phones (cellular and smartphones), could address the needs of older persons, very little was revealed in terms of how the use of mobile phones could mediate or limit older persons' navigation in addressing their social goals and psychological needs (Goodman, Brewster & Grey, 2004; Hoffman et al., 2015; Ruxwana, Herselman, & Conradie., 2010; Van Biljon, Renaud, & van Dyk., 2013). It is also possible that older persons do not only rely on members of the younger generation for assistance with the use of mobile phones, but too little research has been conducted on this topic and also motivate the importance of this research. In this study the type of mobile phone (cellular or smart phones) is irrelevant, as the focus is on how the device is used to regulate relationships.

Mobile Phone Use by Older Persons

In an ever-developing technological world, mobile technology has become a common method of interpersonal communication (Jin & Park, 2012). Mobile phones have also changed social interaction rituals significantly (Martinez, Aguado & Tortajada, 2012). Martinez-Pecino, Martinez-Pecino and Lera (2012) are of the opinion that people who do not use mobile phones may be excluded socially and lose the opportunity for further social interaction. However, other studies have shown that mobile phones can be used to gratify needs such as care and companionship (Goodman et al., 2004; Ramirez, Dimmick, Feaster, & Lin, 2008); as well as enhancing and expanding older persons' social networks (Melenhorst, et al., 2001). For those who do not have the basic knowledge to operate a mobile phone and access its different functions, these benefits are not always available.

Jin and Park (2010) found that people use their mobile phones mainly for two reasons, namely for instrumental or for social motives. Instrumental motives refer to the use of a mobile phone mostly for utilitarian purposes, for example to make an appointment with the doctor, while social motives refer to communication with people and for companionship (Jin & Park, 2010). Mobile phones are thus not only useful for practical purposes, but also have the mediating potential to fulfil people's needs, such as the need to belong, or by keeping them in touch with their loved ones (Jin & Park, 2012; Martinez-Pecino et al., 2012). Even though, older persons may not know how to use their mobile phones, according to Lang, Reschke and Neyer (2006) it is possible for older persons to adapt to their social environment by learning how to use a mobile phone.

Mobile technology is considered a useful tool to build and maintain social relations (Martinez-Pecino et al., 2012). Older persons navigate or regulate themselves to adjust to changing environments to address their various care needs. Self-regulation and relational

regulation are therefore closely related. In order to better understand relational regulation it is first necessary to understand how relational regulation fits into the broader understanding of self-regulatory processes.

Self-regulation

Self-regulation may be seen as a purposive process by which people adjust themselves to be able to achieve a certain goal (Carver & Scheier, 2011). A vast number of self-regulation theoretical models exist that describe self-governing behaviour, but for the purpose of explaining self-regulation as introduction to relational regulation the cybernetic-based model is used (MacKenzie, Mezo, & Francis, 2012). The cybernetic-based model of self-regulation is based on the theory of mechanical system regulation and involves four distinct components that are structured in a linear feedback loop (Carver and Scheier, 1981, 1998; Karoly 1993; Powers 1973; Tsui and Ashford 1994; Wegner 1994). According to MacKenzie et al. (2012), these four components are reference, input, comparator and output. Reference refer to the plan or ideal towards which you strive (goal), whereas input refers to the information about actual events (Carver and Scheier, 2012), in order to effectively regulate behaviour (MacKenzie et al., 2012). The comparator component of self-regulation compares the information about the actual event (input) with the reference (ideal goal) in order to be able to adjust behaviour and influence the final part of this process. Finally, output (the fourth component of self-regulation) refers to observable behaviour and can be seen as the response to the information provided by the comparator (MacKenzie et al., 2012; Carver & Scheier, 2012). In line with the cybernetic-based model Figure 1 visually illustrates the regulation process where, people identify and set goals (reference), collect knowledge about how to address their goals (input), compare the goals with the knowledge gathered on how to address the goals by promoting positive outcomes and avoiding negative outcomes

(comparator), and then adjusting their behaviour accordingly in order to address their goals (output) (Botha, 2013; Carver & Scheier, 2011, 2012; MacKenzie et al., 2012). This process is illustrated in the figure below.

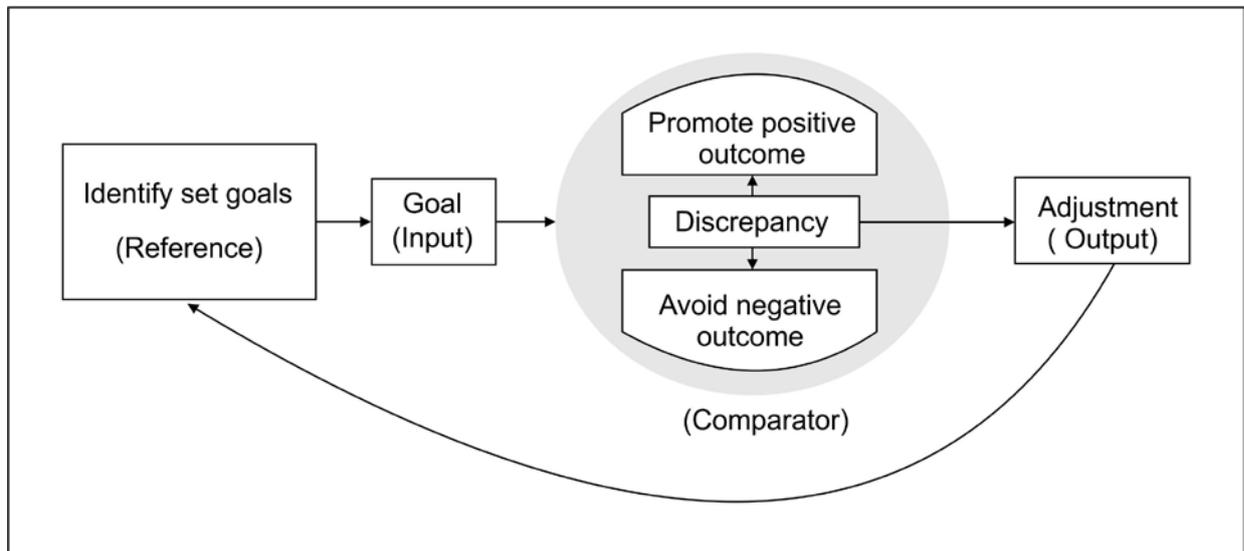


Figure 1: Simplified regulation process (adapted from Botha, 2013)

Self-regulation is a dynamic internal process and three distinct functions of this regulatory system is emphasised, namely that it (a) monitors the internal and external environments, (b) encourages positive or negative responses, and finally (c) elicits a response to benefit from the opportunity or to avoid the threat (Botha, 2013; Leary, 2011). Self-regulation is consequently an important process because it allows people to navigate themselves in every aspect of life, and specifically in their social world (Berger, 2011), which refers to relational regulatory processes.

The importance of regulation in the social world is noted by Leary (2011), who argues that people possess certain social regulatory mechanisms to control or regulate interpersonal actions. This is known as a sociometer, of which the main function is to increase the positive relational value of individuals in their relationships (Leary, 2011) through self-regulatory processes. According to Leary (2011) the prerequisite for all interpersonal relationships is

that an individual must be marginally accepted by others while avoiding complete rejection. To this end people develop a system, called relational regulation, for regulating their relationships with other people (Leary, 2011; Maslow, 1943). Through relational regulation people respond to others to meet social environment goals (Baumann & Kuhl, 2003; Berger, 2011; Finkel & Cambell, 2001; Koole, Kuhl, Jostmann, & Finkenbauer, 2006).

However, very little is known about the processes involved in relational regulation, and, more specifically for this study, about older persons' relational regulation by means of mobile phones. Therefore, in order to understand the concept of relational regulation and how it forms part of self-regulation, a literature search was conducted. It is important to note that only the guidelines suggested were followed and that this was not a systematic review (Cochrane Collaboration, 2003; Furlan et al., 2015; Katrak, Bialocerkowski, Westropp, Kumar & Grimmer, 2004; Wright, Brand, Dunn & Spindler, 2007). Wright et al. (2007) suggest a standard form when conducting this kind of literature review. These phases include: (a) using the research question, (b) developing a research protocol, (c) conducting literature search, (d) extracting the data (articles), (e) critically appraising articles, (f) analysing data, and (g) writing a research report (Furlan et al., 2015; Wright et al., 2007). These steps were used as guideline in order to identify relevant studies that focus on relational regulation in the field of psychology. Addendum 1 provides more information regarding the process followed in identifying relevant articles and Addendum 2 provides a reference list of articles that were reviewed. The focus of this literature search was to review contributions with an explicit focus on relational regulation in an intra/intergenerational context, since this study is particularly interested in looking at how relations (including relations with younger people or peers) can mitigate or limit the care needs of older persons. The articles identified and listed were critically reviewed according to general qualitative

critical appraisal guidelines and include: reviewing the research question asked, identifying the focus of the article, and reviewing the application of the study's findings (Cochrane Collaboration, 2003; Katrak, et al., 2004; Wright et al., 2007).

The articles referred to will be discussed in the section below according to the different contexts in which relational regulation is applied.

Relational Regulation in Different Subject Disciplines

Relational regulation is used differently in various subject fields. For example, in sociology, relational regulation is understood as the process by which the individual and the organisation aim to “govern the gap between regulatory expectations and performances with an appreciation of the on-going production of organisational and material life through human transactions” (Huising & Silbey 2011, p. 17). However, there may often be a mismatch and in this definition the impracticality of perfect conformity between the two parties is recognised even though both parties try to maintain productive practices (Silbey, 2011). A critique of this definition, however, holds that it does not focus specifically on the processes involved in relational regulation between people and the environment but focuses only on the regulation of systems.

In the fields of psychology and social sciences there are also different definitions to relational regulation. Relational regulation is for example, used to evaluate the competence of dealing with conflict in relationships (Darnon, Muller, Schrager, Pannuzzo, & Butera, 2006). The one-sidedness of this definition is that it applies only to conflict situations while regulations in other types of social interactions with people are not addressed.

Other researchers, such as Lang (2001) and Mejía (2011), refer to relational regulation as relationship regulation, where the focus is more on the adaptability of an individual and

manifests on three different levels: (a) interactions in a personal network with multiple persons, (b) on a one-on-one individual level; and (c) in everyday social interactions (Lang, 2001). Mejía (2011), on the other hand, sees relational regulation (relationship regulation) as an individual's ability to navigate the complexities of their social world by selecting social partners, types of interactions, and the nature of these interactions.

Although there are various definitions of relational or relationship regulation as it is also referred to, most of the definitions emphasise the regulation of social networks and interactions with others (Lakey & Orehek, 2011; Lang, 2001; Mejía, 2011; Mejía, 2014). A possibly helpful theory that could be used to explain the regulatory processes in relational regulation is Relational Regulation Theory (RTT) (Lakey & Orehek, 2011).

RTT distinguishes between the individual's personality and the social influences on that person (Lakey & Orehek, 2011). According to RTT, people have ideal levels of affect, action and thought for every interpersonal context, which motivate them to maintain or achieve these levels in their daily interactions. These ideal levels of affect, action and thought are maintained by means of regulating their social environment (Lakey & Orehek, 2011; Lakey, Cooper, Cronin, & Whitaker, 2014). People subjectively evaluate and adjust their affect, thoughts and behaviour primarily in relation to others in their close interpersonal relationships to address their needs and social goals (Lakey & Orehek, 2011). However, the social environment at which these actions are aimed focus only on perceived social support and mental health (Lakey et al., 2014); and the theory contributes only to an intrapersonal understanding of regulation in a specific interpersonal context, but not to an interpersonal understanding of regulation and how it can be applied in different contexts. As mentioned above the terms relationship regulation and relational regulation are used interchangeably in literature. For the purpose of this study the term relational regulation is preferred.

Relational Regulation and Older Persons' Social Environments

In the social sciences, definitions of relational regulation are clearly embedded in a person's social environment. In a study on relational regulation processes in older adults, Mejía (2011) identified key characteristics of relational regulation, namely: (a) the composition of older persons' social environment; (b) how older persons use regulation strategies to work towards their social goals; and (c) the embeddedness of relational regulation in the social environment. It could be summarised that although some of the literature refers to relational regulation strategies, the descriptions of these strategies are vague and not discussed in detail. Some of these studies do, however, emphasise the social environment in which relational regulation takes place.

Following the different definitions and the social component of relational regulation, it is seen as a continuous process consisting of the evaluation of the significance of the person-environment relationship, in terms of the potential to achieve personal goals for survival and self-actualisation (Lazarus, 2006; Maslow, 1943; Mejía, 2011; Vorster, 2011). In line with the cybernetics-based model of self-regulation, the features of regulatory systems, and the relevant literature, relational regulation will be defined in this study as: the subjective assessment of individuals' own competence (intrapersonal) to navigate themselves or other people (actions and behaviour) to achieve their social goals, or to satisfy psychosocial needs, which in turn impact on their subjective experience (Lahey & Orehek, 2011; Lang, 2001; Leary, 2011; Koole et al., 2006). Social goals refer to achieving compliance, providing information to others, generating affinity and resolving social conflict (Wiemann & Daly, 2011), while psychosocial needs refer for example to being cared for, mastery, curiosity, recognition and confirmation (Roos, in press-b). Mejía and Hooker (2013) believe that social goals and relational regulation are closely related to each other, as

social goals such as support are regulated through relationships. People's survival depends on the satisfaction of their physical and psychosocial needs (Maslow, 1943). Reciprocity in the relational regulation processes is obtained and provided in the interaction between people (Lakey, Cooper, Cronin, & Whitaker, 2014; Maslow, 1943). It is important to note, however, that the strength and quality of the social ties are crucial and both parties in the interaction should feel that their needs are being met (Nurullah, 2012).

Consequently, relational regulation becomes even more important in the case of ageing people. As people age, their efforts to incorporate change, such as technological developments, and to manage their social environment and resources are often challenged by declining physical and cognitive abilities and smaller social networks (Antonucci et al., 2004; Hardril & Olphert, 2012; Lang & Heckhausen, 2006; Mejía, 2011). Lang (2001) indicates that social relationships contribute to older persons' adaptively in two distinct ways. First, social relationships may be seen as a resource for quality of life, and second, people enhance their social resources by regulating the quality, structure and function of their social relationships (Lang, 2001; Mejía, 2011). Older persons' adaptation to changing needs later in life is therefore an indication of their effective strategies to navigate themselves in the environment and in relation to other people (Hardril & Olphert, 2012; Mejía, 2011). According to Baltes (1997), the adaptive development of older persons involves processes of selection, optimisation and compensation. Selection refers to the identification of goals with the aim of using resources, and a restructuring of goals due to loss or anticipated loss that has implications for the functioning of older persons (Bajor & Baltes, 2003; Riediger & Lindenberger, 2006). The optimisation of resources is aimed at maintaining the quality and improving resources. When discrepancies between goals and progress are observed, people need to compensate or change, by either changing the goals themselves or by changing the

context (Maes & Karoly, 2005). It is therefore crucial to ensure that older persons develop and maintain their ability to regulate their social environments in order to be able to address their care needs.

Social Theoretical Frameworks Explaining Relational Regulation

Because relational regulation is embedded in the social environment it is important to review social theories that address generational relations. There are three theories that can provide some insights into this social environment. The social convoy model focuses on the types of relationships that develop through a person's life; the Intergenerational solidarity theory describes the dimensions of the social environment between generational members; and finally the Self-Interactional Group Theory (SIGT) can provide insights into the different levels of analysis of the interactions between people. These theories are discussed below.

Social Convoy Model

The Social Convoy Model demonstrates the development of relationships and represents the proximal social environment in which older persons regulate relations to achieve their social goals (Antonucci, Ajrouch & Birditt, 2013; Kahn & Antonucci, 1980; Mejía, 2011). The Social Convoy Model suggests three circles that indicate the varying degrees of closeness in relationships (close; closer; closest). The model proposes that people enjoy the support of close and important others who protect and socialise their members across the life span (Antonucci et al., 2013). This means that as people grow older their convoy (close and important others) changes and adjusts to provide new forms of support as needed. The social structure of older persons thus creates a parameter within which they can regulate their actions by means of their interpersonal resources. This model of social relations has been applied mainly in explaining familial social relations. In the South African contexts, many older persons are part of communities that not only include family members

in their social networks but also unrelated community members such as friends and other acquaintances (Girvan & Newman, 2002). Even though Mejía (2011) proposes that the proximal and distal social interactions of the social convoy model explain relation regulation, it does not include younger generational members' willingness to provide support and assistance. Therefore the Intergenerational solidarity theory is also needed to explain relational regulation in older persons' phone use.

Intergenerational Solidarity Theory

Intergenerational solidarity theory refers to a multidimensional theoretical classification to examine intergenerational interactions (Hoff, 2010). Solidarity is defined as the willingness of generational members to provide each other with support, services and assistance (Bengtson & Schrader, 1982). The Intergenerational solidarity theory has six dimensions, namely associational, affectual, structural, consensual, functional, and normative solidarity (Bengtson & Roberts 1991; Daatland & Lowenstein, 2005; Hoff, 2010). These dimensions attempt to explain the connectedness of the relationships between the generations and contribute to different aspects of an intergenerational relationship (Daatland & Lowenstein, 2005). The intergenerational solidarity theory is relevant because older persons' needs are in line with the different elements or dimensions of the intergenerational solidarity model. The dimensions of solidarity are defined and empirical indicators are presented in Table 1 (below).

Table 1. Dimensions of solidarity

Dimensions of solidarity	Definition	Empirical indicators
Associational solidarity	Refers to the patterns of interaction between generations and includes the frequency of contact and shared activities between them (Bengtson & Roberts 1991; Hoff, 2010; Wood & Liossis, 2007).	Frequency of interactions Shared activities
Affectual solidarity	Measures the emotional closeness between generations and the degree of positive regard towards family members (Bengtson & Roberts 1991; Hoff, 2010; Wood & Liossis, 2007).	Rated closeness and affection
Consensual solidarity	Refers to the degree of agreement between generations regarding values, beliefs, and attitudes (Bengtson & Roberts 1991; Hoff, 2010; Wood & Liossis, 2007).	Shared beliefs, values and attitudes
Functional solidarity	Refers to the degree of support and the exchange of resources between generations (Bengtson & Roberts 1991; Hoff, 2010).	Perceived reciprocity of support Frequency of support
Normative solidarity	Measures the strength of the commitment to familial roles and obligations (Bengtson & Roberts 1991; Hoff, 2010).	Ratings of family importance and strength of filial obligations
Structural solidarity	Refers to demographic factors that affect opportunity for interaction between generations (Bengtson & Roberts 1991; Hoff, 2010; Wood & Liossis, 2007).	Physical proximity Number of family members Health of family members

The different dimensions of intergenerational solidarity may each have an effect on the quality of the intergenerational relationships. These dimensions also influence one another; for example physical proximity may influence the frequency of support received (Bengtson & Schrader, 1982). Researchers have realised, however, that the intergenerational solidarity theory has some limitations. The theory cannot not be generalised to the nature of all intergenerational relationships, for example, because of the ambivalence that exists between members of different generations (Lüscher, 2002). This theory can, however, be used to provide a basis of understanding how to promote solidarity in intergenerational relationships. It can also be used to assist in the understanding of the relational regulation strategies older persons employ in order to address their needs and achieve their social goals. As relational interactions are embedded in people's social environment, SIGT provides insights into the levels of analysis that are relevant in the interactions between generations.

Self-Interactional Group Theory (SIGT)

SIGT proposes that relationships are continuous and reciprocal interactions that are informed by the subjective experiences and relational qualities of the people who interact with each other (Roos, in press-b). In line with the intergenerational solidarity model, SIGT (Roos, in press-b) proposes that intergenerational relationships be studied on different levels, namely on the intra-individual, the inter-individual, and on the group level.

The intra-individual level emphasises the feelings and presenting problems of both generations (Roos, in press-b). The inter-individual level refers to the definition of the relationship, the relational qualities, and the motivation for the interaction as well as the interactional processes between the generations (Roos, in press-b). Lastly, the group level aims to gain insight into the group dynamics between the generations (Roos, in press-b). SIGT is therefore suited to addressing the limitations of the intergenerational solidarity

theory, because it deals with group processes, and intra- and inter-individual processes involved in intergenerational interactions, and explores the subjective experiences of the individual within their social environment (Roos, in press-b). This theory can therefore aid in understanding relational regulation because regulation always takes place within a social context.

PROBLEM STATEMENT

Literature indicates that mobile technology play a very important role in terms of older persons' need for social support and in assisting them to satisfy their needs (Melenhorst, et al., 2001; Feist, Parker, Howard, & Hugo, 2010). For people to address their social goals and to satisfy their psychological needs in a social environment, they have to regulate themselves in their relationships. Mejía (2011) explored relational regulation as a daily social regulatory process in older persons but did not focus on relational regulation in older persons' mobile phone use. The manner in which older persons' relational regulation emerges in the use of mobile phones in their relationships with their peers and members of the younger generation thus remains unclear. In order to explore relational regulation in older persons' mobile phone use, this study is guided by the following three questions: First, whom do older persons contact by mobile phone? Second, for what purpose do older persons contact them? Third, how do older people ask for help from others if they cannot use the functions on their mobile phones? The responses to these questions might make it possible to draw conclusions about the different relational regulatory processes older persons apply to achieve their social goals or meet their psychosocial needs. This research therefore sets out to explore relational regulation in older persons' use of their mobile phones in intergenerational relations.

METHODOLOGY

This section aims to orientate the reader in the research context. Due to limited word count suggested by the Journal of Social and Personal Relationships, additional information about the research design, research context and participants, data collection, and data analysis of the IGNITE study and this secondary study is discussed to better orientate the reader.

Research Design

This study forms part of the study, *An exploration of enabling contexts*, and the sub-study Intra/InterGenerational Networks through Information Technology (IGNITE), which aims to explore older persons' usage patterns of mobile technology (mobile phones) and how intra/intergenerational relationships are mitigated or limited by the use of mobile phones. Data to address this broader research goal of the sub-study were gathered by means of a multi-phase data collection method utilizing a convergent parallel mixed-method design, whereby quantitative and qualitative data were obtained.

The qualitative component made use of an interpretative descriptive research design (Sandelowski, 2010; Thorne, Kirkham, O'Flynn-Magee, 2004). An interpretive-descriptive research design was applied, as it allows researchers to capture the subjective experiences of participants in order to generate a description that can inform theoretical understanding of a specific phenomenon (Thorne, Kirkham, O'Flynn-Magee, 2004). This design allows the researcher to gain insights into how a person in a certain context makes sense of a phenomenon, for example to explore older persons' mobile phone user patterns (Thorne, Kirkham, O'Flynn-Magee, 2004). Qualitative research enables researchers to move beyond what is presented, to reveal hidden dimensions of a phenomenon (Denzin, 2009).

This study used secondary data from the qualitative component of the IGNITE project. In a secondary analysis, the research question asked differed from those of the original study (Irwin, 2013). However, it is possible to use new research questions to deduct the relational regulatory processes and strategies that older people apply through mobile phone use because rich and detailed data were obtained in the original study.

Research Context and Participants

The research was conducted in Potchefstroom, Ikageng and Promosa, suburban areas within the Tlokwe Municipality of the North West province, South Africa. These areas were chosen because they represent communities that speak different languages (Afrikaans, English and Setswana) and represent different levels on the Living Standard Measurement (LSM) scale (South African Audience Research Foundation [SAARF], 2012).

The LSM scale is a questionnaire designed to create a measure of social class in South Africa, without classifying the population in terms of race and income, given the sensitive past socio-political history of the country. The scale ranges from LSM 1 to LSM 10. The variables included in the index are based on household data, such as having hot running water or access to mobile phones, and various aspects of household welfare and behaviour (Grosch & Glewwe, 1995; SAARF, 2012). The LSM is mainly used as a market research tool to provide insights into the different target groups within the South African population (Brilman et al., 2014). Although the LSM is widely used, SAARF (2012) recommends that language, life stage and income should also play a role in studies. Therefore participants from different language groups were also included in this study. The LSM scale was used in this study in order to move away from racial classification and focus instead on the different socio-economic levels of the participants, and to ensure that the participants are not discriminated against race, gender or sexual orientation.

Participants were recruited for the IGNITE study with the assistance of gatekeepers in the community, by word of mouth and by putting up posters. The participants were selected by convenience sampling using specific selection criteria. The selection criteria applied were (a) older persons (60+), who (b) had access to a mobile phone (their own phone or uses a phone with the help of others), and (c) represented different socio-economic levels based on the SAARF Living Standard Measurement (LSM) scale.

Procedure

For the IGNITE project (NWU-00053-10-S1), ethical clearance was obtained from the Human Research Ethics Committee (HREC) in the Faculty of Health Sciences of the North-West University (Potchefstroom campus). Managers of the three day care centres (Ikageng, Potchefstroom, Promosa) for older persons served as gatekeepers to the participants. Participants were informed of the aim of the research and data collection, and about their rights, the voluntary nature of the participation in the research, and they signed informed consent letters or gave verbal content if they were illiterate, before they participated. Data were collected by postgraduate students who served as fieldworkers and are proficient in Afrikaans, English and/or Setswana, and by the main researcher of the IGNITE project.

Data Collection

Data were gathered by means of a multi-phase data collection method utilizing a convergent parallel mixed-method design, whereby quantitative and qualitative data were obtained.

The quantitative component comprised an IGNITE questionnaire aimed at gathering data on the user patterns in older persons' mobile phone use, while the qualitative data (semi-structured interviews; group interviews and the Mmogo-method®), aimed to gain more in-depth knowledge about the subjective relational interactions. On the different data gathering

days participants were asked to voluntarily complete the IGNITE questionnaire with the help of trained fieldworkers, and participants who volunteered to take part in the qualitative data collection were asked to group themselves in groups to take part in the qualitative data collection phase. The quantitative and qualitative data were analysed and the qualitative data revealed different themes, for example agency, self-regulation and the importance of relationships in older persons' use of their mobile phones. It was therefore decided to conduct a secondary analysis of the relational interactions using qualitative data that were gathered by means of the Mmogo-method® because it is essentially a method that emphasises personal and group experiences (Roos, in press-a).

For the purpose of this secondary study the focus will be on the data gathered via the Mmogo-method®, because it enabled the same research question to be asked in different contexts to gain insights into personal and group experiences of older persons and their mobile phone use.

The Mmogo-method® is a visual data-gathering method that uses an open-ended prompt to request participants to build something using unstructured materials provided, including clay, beads and straws (Roos, 2012; Roos, in press-a). This method allows the participants to express their personal perspectives, feelings and experiences in relation to their own background and environment (Roos, 2012; Roos, in press-a). The use of this method is appropriate because it creates a context for optimal participation by participants and emphasises the importance of the group (Roos, 2012). This method is not culturally biased and provides participants with the opportunity to share information on social issues that are difficult to describe in the ordinary way (Roos, in press-a). The Mmogo-method® uses principles of projection, and by providing participants with unstructured materials (beads, straws and clay) and an open-ended question allows them to visually portray

something they attach meaning to (Van Biljon & Roos, 2015). In the exploration of the meaning participants attach to their visual representations, the representations are seen as offering different perspectives on their social reality (Roos & Baart, in press). The Mmogo-method® is therefore an appropriate data-collection approach for exploring relational regulation, which is an internal process that cannot necessarily be described in a semi-structured interview.

The prompt question in the Mmogo-method® data collection sessions was: *Please make us a visual representation of how you use your cell phone.* After the participants had constructed their self-generated images following the prompt, they explained what they had made. The researcher then asked: *Can you tell me what you have made?* and *Please tell me more about your representation,* to clarify the exact meaning behind the representation. In every instance the participants referred to people who had been contacted by mobile phone, and if they did not spontaneously mention why they had done so, the researcher asked them about it specifically. Questions such as, *Whom do you contact with your mobile phone?* *Why do you contact them?* and *How do you ask for help if you can't use your phone?*, were also asked to clarify how the individual participants used their mobile phones. After the individual participants clarified how they used their mobile phones, the remaining participants were invited to complement the explanation of the individual participant.

Data Analysis

In the original study, visual and textual data were obtained. After permission of the primary researcher to conduct a secondary analysis on the data, the data were anonymized and subjected to visual and thematic analysis.

The visual data for the secondary analysis (the photos of the visual presentations) were analysed by connecting the symbolic values participants attached to their representations with the research question (Roos, 2008; Roos, in press-a), which in this instance was: *What relational regulation strategies do older people use?* The visual data analysis was carried out according to the six steps suggested by Roos and Redelinguys (in press) for analysing visual data collected via the Mmogo-method®. These steps are to: (1) describe the production context, (2) assume an empathic position towards the data, (3) describe the literal observations of the visual elements observed, (4) describe the symbolic meanings attributed to representations by participants, (5) describe the participant introduced context, and finally to (6) conduct an interpretive analysis (Roos & Redelinguys, in press; Roos, in press-a).

The textual data (transcribed recordings) was thematically analysed to generate themes. Thematic analysis is a method used in qualitative research to identify, analyse and report certain patterns within transcribed data (Clarke & Braun, 2013; Braun & Clark, 2006). The thematic analysis steps followed are: (a) reading through the data to get a sense of the whole dataset, (b) searching for themes in the structure of the experiences, (c) recognising themes and then (d) producing a written report of the themes (Clarke & Braun, 2013; Braun & Clark, 2006).

CONCLUSION

In this chapter, terms were defined, and the theories underpinning this study and the methodology that was followed were discussed. The research conducted will be presented in article format and will be followed by a critical reflection that will highlight the contributions made to the fields of psychology and gerontology.

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Addendum 1

Systemised literature review process

Phase	Purpose	Application
Phase 1	Formulate a research question	How does relational regulation manifest in relations?
Phase 2	Develop research protocol	<p>SPIDER criteria (Cooke et al., 2012) were used to determine the key words. (Sample, Phenomenon of Interest, Design, Evaluation, and Research methodology).</p> <p>The search terms are therefore: “<i>relational regulation</i>” OR “<i>relationship regulation</i>” (abstract); “<i>relationship regulation</i>” OR “<i>relational regulation</i>” AND “<i>intergenerational relations*</i>” (abstract); “<i>relational regulation</i>” OR “<i>relationship regulation</i>”; AND <i>relationship*</i> (abstract).</p>
Phase 3 and 4	Conduct the literature search, and extract data	<p>Inclusion criteria for reference screening:</p> <ol style="list-style-type: none">1. Written in English2. Peer-reviewed journals3. Explicit emphasis on relational regulation and not only supplementary discussion <p>Search engines and databases used:</p> <p>EbscoHost (Academic Search Premier, Africa-Wide Information, CAB Abstracts, CINAHL with Full Text,</p>

E-Journals, ERIC, Health Source: Nursing/Academic Edition, MasterFILE Premier, MEDLINE, Philosopher's Index, PsycARTICLES, PsycINFO, SocINDEX with Full Text.), GoogleScholar, and ScienceDirect.

Phases 5 and 6 Critical appraisal of articles

Articles were appraised according to the focus of the article, and relevance to relational regulation in relations and where possible, specific intergenerational relations.

732 articles were retrieved. Duplicate entries, non-research articles, articles that did not focus on relational regulation in a social science context, articles that focused on psychopathology and articles that were not from peer-reviewed journals, were removed.

A total of 10 articles remained for full review. (See addendum 2 for the reference list.)

Addendum 2

Reference list of articles retained for full review

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MANUSCRIPT FOR EXAMINATION

Exploring relational regulation in older persons' mobile phone use

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Abstract

Contextualised against growing populations, mobile technology has become a viable option for people, particular older people, to address their tangible and intangible care needs. Relational regulation is an important process which enables people to address their needs. Relational regulation can be defined as the navigation of strategies in the social environment aimed at addressing social goals and psychosocial needs. This study therefore aims to explore relational regulation in older persons' use of their mobile phones. The Mmogo-method®, a visual data-collection method was used to obtain data from 19 participants (17 female; 2 male), aged 60 and older, who had access to a mobile phone and represented different socio-economic levels based on the Living Standard Measurement (LSM) scale. Data about relational interactions and mobile phone use were subjected to a secondary analysis, using thematic and visual analysis. Findings revealed that: (a) older persons have various social goals and psychological needs they address through mobile phone usage; (b) relational regulation is dependent on the participants' subjective assessment of their own competence to use mobile phones; and (c) they employ various relational regulation strategies to address these needs, including; the independent use of the functions of the phone, giving instructions for assistance, postponing gratification of needs until a competent person can assist, and implicit negotiation strategies that younger people may use their phones in exchange for assistance to address needs. The findings of this research may be used to develop programmes that aim to improve older persons' knowledge and skills to manage their technological resources.

Keywords: Intergenerational relations; mobile phones; Mmogo-method®; older persons; relational regulation; self-regulation

Introduction

This study is part of a larger research project that aims to explore older persons' mobile technology (mobile phones) user patterns and how intra/intergenerational relationships are mitigated or limited by the use of mobile phones. Data for the bigger research project were gathered by applying a multi-phased qualitative and quantitative data-gathering strategy and using a convergent parallel mixed method research design. The quantitative component of the bigger study comprised an IGNITE questionnaire (n=125) (Hoffman, Roos, Stols, & Bohman, 2015) aimed at gathering data on the user patterns in older persons' mobile phone use. The qualitative data were gathered by means of semi-structured interviews (n=23), group interviews (n=10) (Hoffman et al., 2015) and the Mmogo-method® (n=19) (Roos, 2008, 2012, in press-a). Different themes emerged from the qualitative data, for example themes regarding agency, self-regulation and the importance of relationships in the use of mobile phones. A secondary analysis of the data was conducted specifically to explore how older persons navigate themselves by using their mobile phones to address their social goals and psychological needs. This study focuses only on the qualitative data that were gathered in the larger study by means of the Mmogo-method®, a visual projective data-collection method, because; (a) it emphasises the relational aspects of people in a group setting; (b) the method may be applied across contexts and allows researchers to ask the same research question, regardless of the socio-cultural contexts in which people function (Roos, in press-a).

Contextualising the study

Population ageing has been observed in a global and African context and has prompted some debate about how this will impact on communities and families (Apt, 2012).

In developing countries such as South Africa population ageing is of great concern because the government, like those of other countries, does not have sufficient resources to address older persons' care needs, and not all older persons have access to residential care facilities (Bowes & McColgan, 2013). Governments in Sub-Saharan Africa and South Africa are therefore looking towards families and communities to address the care needs of older persons (Aboderin & Hoffman, 2015; Keating, Eales & Phillips, 2013). As community and family boundaries are often fused in some South African and African communities, the increasing care needs of older people will place pressure on members of the younger generation, irrespective of whether they are familially related or not. Members of the younger generation, however, do not always have the will, resources, or opportunities to address the care needs of older persons (Aboderin & Hoffman, 2015). Care needs in this context refer to physical, instrumental, financial care (tangible care) or emphatic, warm and caring relationships (intangibile care) that occur in mutual relational interactions with other people (Oosthuizen, 2014; Roos & Du Toit, 2014; Ryff & Singer, 2002). In view of the limited resources available for care of older persons, the exploration of alternative avenues to assist them to remain independent within their living environment is suggested.

In the last decade mobile phones have become a common method of interpersonal communication and have changed social customs radically (Jin & Park, 2012; Martinez, Aguado, & Tortajada, 2012). Some studies have shown that people who do not use mobile technology may be socially excluded (Martinez et al., 2012), while other studies have indicated that mobile phones can be used to gratify care needs, and enhance or expand older persons' social networks (Goodman, Brewster & Grey, 2004; Melenhorst, Rogers, & Caylor, 2001; Ramirez, Dimmick, Feaster, & Lin, 2008). Although these studies found that mobile technology can be used to address some needs, a major limitation is that not enough is known

about older persons' patterns mobile phone usage or how the use of mobile phones can mediate or limit older persons in their relationships with their peers or members of the younger generation in addressing their social and psychological needs (Hoffman et al., 2015; Ruxwana, Herselman, & Conradie, 2010; Van Biljon et al., 2013). Research into how mobile phones can mediate or limit older persons in the navigation to address their various care needs is imperative because the mobile phone has become a widely available and affordable instrument. Jin and Park (2012) suggest that mobile phones are used mainly for instrumental (utilitarian purposes such as making appointments) or social reasons (communication with others). Lang, Reschke and Neyer (2006) propose that those adapting to the new technological environment fulfil their social needs by learning how to use a mobile phone.

The use of mobile technology therefore offers the potential for older persons to address their social goals or psychosocial needs (Lang, Reschke and Neyer, 2006; Ramirez et al., 2008). Social goals include offering information and resolving social conflict, and psychosocial needs include the need for being cared for, recognition, and confirmation by others (Roos, in press; Wiemann & Daly, 2011). This research is also based on the assumption that older persons have the potential to navigate or regulate themselves to adjust to their changing environment (physical and social) so that they can address their various care needs (MacKenzie, Mezo, & Francis, 2012). The adjustment to the new social environment, which includes the use of mobile phones to facilitate social interactions, is related to self-regulatory processes. In order to better comprehend relational regulation and how it manifests in older persons' mobile phone use it is necessary to understand how relational regulation fits into the broader understanding of self-regulatory processes.

Self-regulation and relational regulation

Self-regulation may be defined as a purposive process whereby people adjust or navigate themselves to accomplish their goals (Carver & Scheier, 2011). There are various theoretical models explaining self-regulation (Botha, 2013), but for the purposes of introducing relational regulation the cybernetics-based model is used (MacKenzie et al., 2012). The cybernetics-based model emphasises circularity in the relational interactions between people and the potential for the adaptation of behaviour to address social goals and satisfy psychological needs (MacKenzie et al., 2012). The cybernetic-based model consists of four distinct features that are organised in a linear feedback loop (Carver and Scheier, 1981, 1998; Karoly 1993; Powers 1973; Tsui and Ashford 1994; Wegner 1994). The four features of this model are reference, input, comparator and output (MacKenzie et al., 2012). A simplified model (adapted from Botha, 2013) to better explain the regulation process is presented in Figure 1.

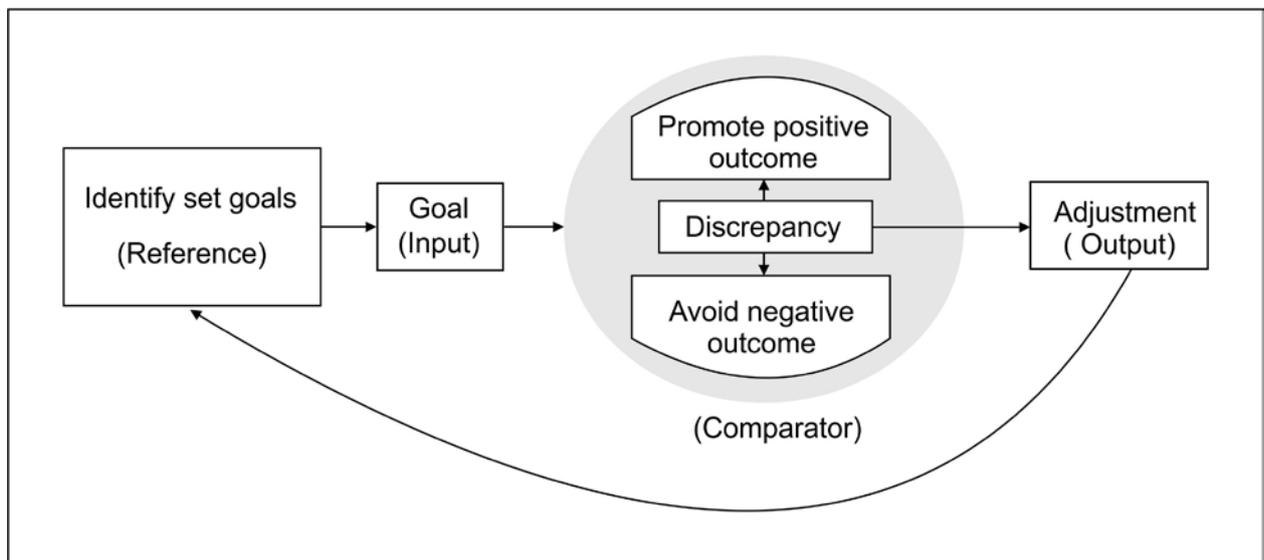


Figure 1: Simplified regulation process (adapted from Botha, 2013)

Following the cybernetic-based model and the simplified model above, people set goals (reference), gather information about how to address these goals (input), compare the

information about the goals with information on how to address the goals (comparator), and then adjust behaviour accordingly to address their goals (output) (Botha, 2013; MacKenzie et al., 2012; Carver & Scheier, 2011, 2012). Self-regulation is thus a dynamic regulatory system of setting goals and guiding behaviour to address these goals. To regulate themselves effectively to achieve their goals people monitor their internal and external environments, which encourages positive or negative responses, to which they react either to benefit from the opportunity or to avoid a threat (Botha, 2013; Leary, 2011). Self-regulation accordingly allows people to navigate themselves in their daily lives.

The role of self-regulatory processes is clear in the manner in which people regulate relationships with others to meet social goals through a process of relational regulation (Baumann & Kuhl, 2003; Berger, 2011; Finkel & Cambell, 2001; Koole, Kuhl, Jostmann, & Finkenauer, 2006). Relational regulation therefore emphasises the social actions people perform in relation to others in order to address their needs (Lakey & Orehek, 2011; Lakey, Cooper, Cronin, & Whitaker, 2014; Leary, 2011; Mejía, 2011). There are various definitions of relational regulation and these are usually context bound (Darnon, Muller, ScHrager, Pannuzzo, & Butera, 2006; Lakey & Orehek, 2011; Lang, 2001; Lakey, Cooper, Cronin, & Whitaker, 2014; Mejía, 2011). Drawing on the cybernetic-based model of self-regulation, the characteristics of regulatory systems and the various definitions of relational regulation, relational regulation may here be defined as the subjective assessment of individuals' own competence (intrapersonal) to navigate themselves or other people (through actions and behaviour) to achieve their social goals, or to satisfy psychological needs, which again are experienced on a subjective level (Lakey & Orehek, 2011; Lang, 2001; Leary, 2011; Koole et al., 2006). Self-regulation and relational regulation is therefore a continuous, reciprocal process between the individual and the social context, drawing on the Self-Interactional

Group Theory (SIGT). SIGT proposes three levels of interaction namely: intra-individual (feelings and problems of both generations), inter-individual (definition of relationship, relational qualities, motivation for the interaction as well as the interactional processes between the generations) and group level (group dynamics between the generations) (Roos in press-b).

It is clear that relational regulation is embedded in a person's social environment and the ability to adapt and exercise control over the environment is entwined with social experiences and being connected with others (Mejía, 2014). According to the social convoy model and Intergenerational solidarity theory older persons shape their social network by selecting partners, for example members of the younger generation, to exchange support and to address their social goals (Antonucci et al., 2013; Hoff, 2010; Mejía, 2014; Wood & Liossis, 2007). As people age, their efforts to incorporate changes, such as technological changes, as well as managing their social environment and resources, are often challenged by their declining physical and cognitive abilities and shrinking social networks (Hardril & Olphert, 2012; Lang & Heckhausen, 2006; Mejía, 2011). In this regard, relational regulation can assist older persons in two ways. First, social relationships are resources that improve quality of life, and second, these relationships can be regulated in terms of their structure, function and quality (Antonucci, et al., 2013; Lang, 2001; Mejía, 2011). Since research indicates that older persons generally have smaller social networks than their younger counterparts (Antonucci et al., 2004; Mejía, 2014), they have reduced social resources to draw on to address their needs.

It is in this regard that the use of mobile phones becomes important as a compensatory medium through which social connectedness can be maintained, despite distance created by relocation; employing this technology can facilitate communication and provide a platform

for support (Jin & Park, 2012; Martinez-Pecino, Martinez-Pecino, & Lera, 2012). The use of mobile phones to stay connected to loved ones might be an indication of relational regulation strategies to navigate themselves and other people in order to achieve a certain social goal (Hardril & Olphert, 2012).

While it is obvious that mobile phones can be used to address certain social needs, it is not clear what relational regulation strategies older persons use to manage their mobile phones use. This study is therefore guided by three questions: First, who are the people contacted by older persons via their mobile phones? Second, why do older persons contact them; and third, how do older person ask for help if they cannot use the functions on their mobile phones? These questions will help guide this investigation into how relational regulation manifests in older persons' mobile phone use. The research is important because mobile technology is becoming an affordable way to assist older persons in their growing care needs, especially in a developing world context (Feist, Parker, Howard & Hugo, 2010; Melenhorst, et al., 2001).

Methods

The broader research project, Intra/InterGenerational Networks through Information Technology (IGNITe) explores older persons' user patterns of mobile phones. In the original study, data were gathered by means of a convergent parallel mixed-method design, using a quantitative questionnaire (n= 125) and various qualitative data collection methods, namely semi-structured interviews (n=23), group interviews (n=10) and the Mmogo-method® (n=19) (Hoffman et al., 2015).

For the purpose of this study, it was decided to use only the Mmogo-method®, which is a visual data-gathering tool underpinned by an interactional approach and which can be

applied across different LSM groups using the same research question (Roos, in press-a). The Mmogo-method® enables the exploration of relational phenomena by obtaining subjective experiences as well as collective experiences in a group setting, irrespective of obvious differences between participants and researchers and educational levels of participants (Roos, 2008; 2012; in press-a).

For the purpose of this study, a secondary analysis of the Mmogo-method®-data obtained in the broader research project was conducted. Secondary data analysis involves the employment of previously produced data to develop new understandings and to ask new questions (Irwin, 2013) which in this instance was how older persons' use their mobile phone in relationships?

Participants

The original research was conducted in three communities which represented different socio-economic levels according to the LSM scale, and which form part of the Tlokwe Municipal area of the North West province of South Africa. The LSM scale was used to determine participants' living standard and did not form part of the data analysis. This scale was applied as part of the selection criteria in order to move away from racial classification and focus instead on the different socio-economic levels in order to ensure that the participants were not discriminated against in terms of race, gender or sexual orientation. The LSM was developed to determine household welfare and behaviour, including education levels (Grosh & Glewwe, 1995; South African Research Audience Foundation [SAARF], 2012). It divides the South African population into segments, with 10 representing the highest level of living standard applicable and 1 the lowest level (SAARF, 2012). The LSM is used to group people into categories by using criteria such as ownership of major home appliances and motor vehicles and access to running water (SAARF, 2012).

In the original study, participants were recruited by using convenience sampling. Participants were informed of the research with the assistance of managers of day care centres in the community and by word of mouth. The selection criteria that were applied were that participants in the research project had to be older persons (60+), who had access to a mobile phone (not necessarily their own), who did not present with visible cognitive disabilities, and who were able to express themselves coherently.

For the secondary analysis only data obtained from the total of 19 participants (2 male; 17 female), aged 60+ who participated in the Mmogo-method® were included. The participants represented different socio-economic levels based on the Living Standard Measurement (LSM) scale (1-10). The average age of the older persons was 73 years, with a mean LSM level of eight. There was low attendance by people from previously disadvantaged backgrounds (35,2%) due to transport difficulties.

Data collection

In each of the three contexts where the research was conducted, participants were requested to arrange themselves in a group. Individual participants were provided with the unstructured materials such as malleable clay, different colours and sizes of beads, and dried grass stalks method that by using an open-ended prompt, they were requested to make visual representations (Roos, 2012). For this research into mobile phone usage, the open-ended question asked to prompt participants to construct visual representations from the materials was a request: *Please make us a visual representation of how you use your cell phone.* After the participants had constructed their visual representations, they explained individually what they had made. The researcher asked further probing questions, such as: *Tell me what you have made.* And *Please tell me more about your representation in relation to the research question.* The other participants in the group were then invited to complement the individual

explanations by contributing their views. Additional questions asked were: *Whom do you contact? Why do you contact them?* and *How do you contact them?* to clarify how and why older persons use their mobile phones. At the conclusion of the data-collection session, the visual representations were photographed and served as visual data, while the individual and group discussions were transcribed verbatim and served as textual data.

Data analysis

The visual data were analysed by the steps suggested by Roos and Redelinghuis (in press) were followed. They are to (a) describe the production context; (b) assume an empathic position towards the data; (c) describe the literal observations of the visual elements observed; (d) describe the symbolic meanings attributed to representations by participants; (e) describe the participant introduced context, and finally (f) to conduct an interpretive analysis (Roos, in press a)

In this secondary analysis, textual data were analysed by thematic analysis (Clarke & Braun, 2013). The steps followed in this process are to: (a) familiarise oneself with the data, by reading and re-reading the transcriptions of the recordings; (b) search for themes in the structure of the experiences, (c) recognise themes and (d) produce a written report of the themes (Braun & Clarke, 2006).

Procedure and Ethics

For the original project, ethical clearance was obtained from the Human Research Ethics Committee (HREC) in the Faculty of Health Sciences of the North-West University (Potchefstroom campus), and allocated the ethical number NWU-00053-10-S1. In the original study the managers of the three day care centres (Ikageng, Potchefstroom, Promosa) for older persons served as gatekeepers to the participants. Participants were informed of the aim of the research and data collection, and about their rights, the voluntary nature of the

participation in the research, and they signed informed consent letters before they participated. Participants who were illiterate gave verbal consent. Data were collected by postgraduate psychology students who served as fieldworkers and are proficient in Afrikaans, English and/or Setswana, and by the main researcher of the overarching project. Participants who joined in the Mmogo-method® were reminded that only partial confidentiality was possible because these sessions involved a group.

In this secondary study all ethical considerations from the original study was adhered to. The primary research team for the IGNITE study gave permission to conduct the secondary research, and one of the primary researchers acted as peer-reviewer of the data analysis to ensure that all ethical considerations of the original study had been complied with. Transcriptions of the audio recordings were anonymised and participants' names were removed to ensure anonymity and confidentiality in the secondary study. During the secondary analysis the electronic data were stored on a password protected computer for which only the primary researcher of the IGNITE study and the researcher of the secondary study had access to data.

Trustworthiness

Various models have been proposed to review trustworthiness and thus ensure rigor and trustworthiness in qualitative research. For the purpose of this study the guidelines of these models were applied to the methodological coherence and the conducted research as a whole (Mayan, 2009). The principles used to ensure the trustworthiness of this study are the following: audit trail; conceptual coherence; member checking; peer review; crystallisation and investigator responsiveness (Finlay, 2006; Krefting, 1991; Mayan, 2009; Tracy, 2010). The aim of this research report was to produce a clear and coherent description of the

research process, subject to an audit trail in order to demonstrate the theoretical rigor of this study (Finlay, 2006).

The next guideline followed was conceptual coherence. Tracy (2010) defines conceptual coherence as the noteworthy interconnection of the literature and theories used, the research question, design and method, the data analysis procedures followed and finally the interpretation of the research findings (Mayan, 2009). In this study and the compiling of the research report care was taken to align the literature, research question and methods used and the manner in which the data were interpreted. The data-gathering method, the Mmogo-method®, was chosen to allow participants to provide rich and detailed descriptions of their subjective experiences (Roos, 2008; 2012). This method also allows for member checking whereby participants have the opportunity to provide feedback and to clarify information (Tracy, 2010) in order to ensure that the researchers do not draw their own conclusions. The participants in this study had the opportunity to join in an informal discussion to ensure that the researcher's conclusions and observations were correct. Furthermore bias was limited because a number of qualitative researchers formed part of the research process (crystallisation) and the research findings were peer reviewed (Ellingson, 2009; Krefting, 1991). The peer reviewer of this study was part of the primary research team of the original IGNITE study, and the themes of this secondary study were compared with the IGNITE findings. Crystallisation was further applied in this study to maximise the range of the data gathered because several groups of participants had participated in the research project. Two methods of analysis, namely textual and visual analysis, were used to further ensure trustworthiness. Lastly, the researcher consistently aimed to remain responsive at all stages of the research by demonstrating integrity, transparency and by being conscious of her own bias and perceptions formed by relational experiences with older persons.

Findings

Following the definition of relational regulation and the research questions, three distinct themes emerged from the data. First, participants identified various social and psychological needs in relation to people and the environment. Second, relational regulation strategies used are reliant on the participants' subjective assessment of their own competence (attitudes, knowledge and skills) to use the mobile phone, and third, the participants used four relational regulation strategies to address their needs, namely the independent use of the functions of the phone to regulate their environment, the postponement of need gratification, a direct request for assistance, and implicit negotiation with the younger generation to address needs. These findings are illustrated visually in the figure below.

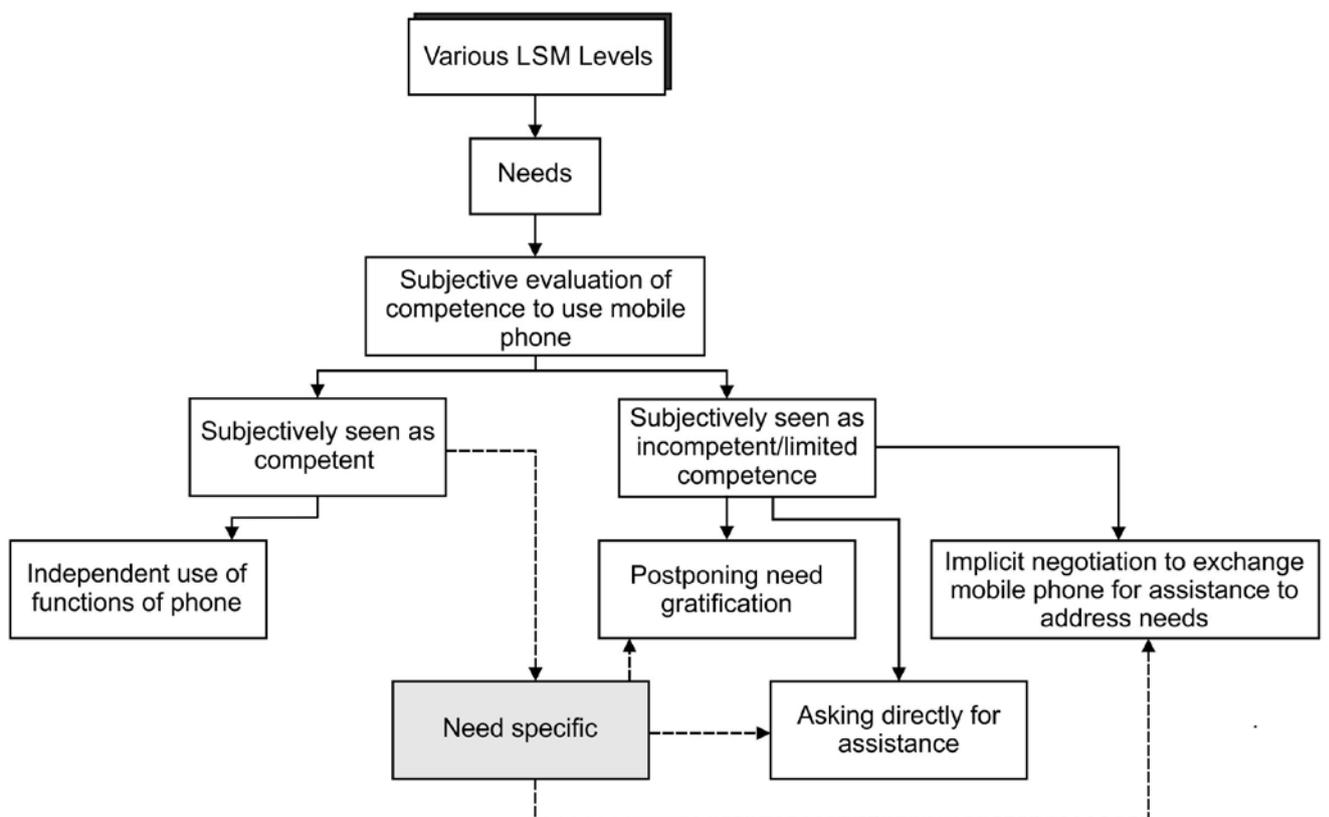


Figure 2: Visual illustration of findings

Needs of Participants Using Their Mobile Phones

In the course of the individual and group discussions of their visual representations the participants indicated that they had various care needs which they expressed in relation to other people, irrespective of the LSM level or subjective evaluation of competence.

Need to contact family and friends

The participants indicated that the mobile phone served as an instrument that enabled them to satisfy their need to stay connected with their loved ones. The mobile phone becomes a medium which enables reciprocal interaction and by means of which older persons regulate their social environment to meet their needs. In some instances, physical distance between the participants and their loved ones created a challenge to stay connected to the older persons' social network. The mobile phone then becomes a medium which makes it possible to move beyond physical boundaries and to maintain a connection with family members and friends.

On the other hand, if they were not able to stay in touch with loved ones, it had a negative impact on participants. One of the participants indicated that she would feel empty if she was not able to contact her family.

I would feel empty. Really, I can't anymore. I mean my kids are the closest to me and you need to communicate with them. How else are you going to communicate with them than you otherwise would have done? (Participant 4, Female)

This participant's as well as the following quote illustrate the feelings if social connectedness is not possible (feel empty), and the joy and pleasure when the mobile phone is used effectively to satisfy the need to stay connected.

Your kids, grandkids, friends, family that you contact or you can exchange photos and that is a pleasure. That is the joy of a cell phone. (Participant 6, male)

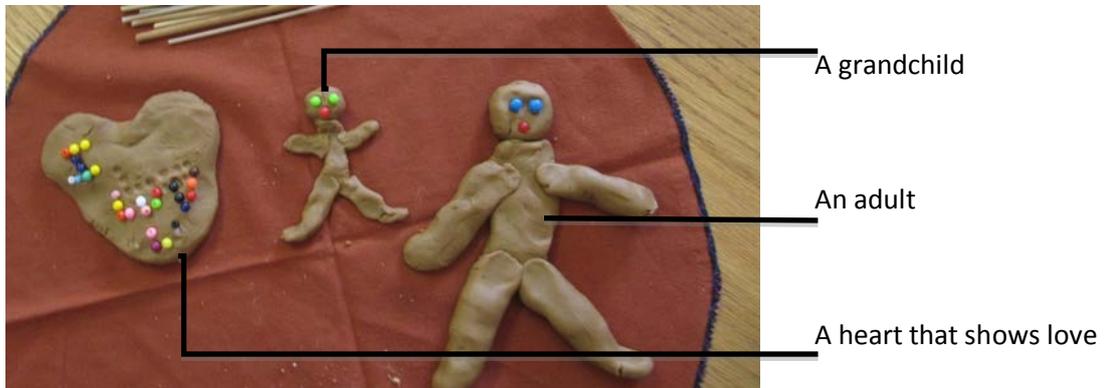


Figure 3: The phone is used to communicate love to loved ones

Need for physical assistance and instrumental support

Mobile phones played an important role in addressing physical needs as they could contact loved ones if they needed assistance. For example one participant indicated that she contacted her family and friends when she did not have a place to stay.

It is family and friends and my brother specifically, because he is the one helping me look for a place to stay (Participant 10, female).

Not only is the mobile phone used to address physical needs such as contacting emergency services (Participant 13, female), but it is also used to obtain information and instrumental support such as looking for new accommodation or cleaning the swimming pool.

I made a cell phone, I can use it when I have problems, for example when you are sick you can phone an ambulance, and it can arrive quickly (Participant 13, female).

Thus the mobile phone is used to compensate for declining abilities by easing daily tasks and responsibilities.

Need for social connectedness

Participants also indicated that they had a need to share their lives with their loved ones. Participant 9 (female) stated that she called her family to enquire about their well-being, and they responded to this by calling her back with information about their lives. Another participant indicated that she felt the need to know more about her grandchildren's achievements (Participant 1, female), and that this need is met by using the phone to contact them. Additionally, the mobile phone enables them to share in the lives of their loved ones. Participant 8 (female) emphasised how the mobile phone enabled her to remain a part of her family's lives despite physical proximity.

The other day they (niece) invited me to their wedding, just before Christmas, and I went to the wedding. And she was four months pregnant, and now her baby is born. Last night they sent me the baby's photo.

The phone therefore allows the participants to stay informed and to contribute to the lives of their loved ones.

Need for information

In this sample group participants indicated their need to remain informed about the world they live in. Some participants wanted to know what their children were going to prepare for dinner (Participant 8, female) while others felt it necessary to remain informed about their bank accounts or medical bills (Participant 4, female). The need for information is best illustrated by the following quote:

Like me who does not have a car, and I can't always go to the bank or to the shops, and so it (mobile phone) is very useful to get information fast (Participant 3, female).

The use of the mobile phone therefore assists older persons to overcome challenges such as limited mobility by providing them, with their having to move, with the relevant information needed to address their needs.

Subjective Evaluation of Competence

There are two clear groups in this sample which are not necessarily linked to the LSM groups: a group with the necessary technical knowledge and skills and a positive attitude to mobile phones (subjective evaluation of competence to use a mobile phone), and a group without the necessary knowledge and skills and a negative attitude to mobile phones (subjective evaluation of limited competence or in competent to use a mobile phone). Before participants could navigate themselves to address their needs, they subjectively evaluated their own competence to use a mobile phone.

Participants with the necessary knowledge and skills use the different functions of the phone, such as making calls, SMS, BBM, WhatsApp, and Skype. The main reason why they use these is to stay connected to family members, particularly when they are physically removed from them. Some participants were even able to purposively navigate the functions of the phone, such as using the camera when prompted to do so. The following quote illustrates the autonomy of some older participants in relying on their own competence to use the different phone functions.

Mine (mobile phone) opened the world of emails for me, because I don't have a computer or something like that. I can contact family that have email, I can take pictures, I can receive pictures, and you can see other people's family photos that you

would not have seen, because they live far away. Now you almost have contact with everybody, because all of them placed new photos on Facebook. Immediately you see my sister's daughter is in Thailand. I have the weather forecast on my phone, so when I wonder if it is going to rain tomorrow, I can always look at the weather report (Participant 3, female).

However, while some participants demonstrated their competency to use their phones' functions, others indicated that they did not have the knowledge or skills to operate their mobile phones.

I don't use a cell phone, because it is complicated, it involves please call me's messages etc. So my kids use it a lot (Participant 8, female)

Similarly, participant 16 (female) indicated that she did not use her mobile phone often because she did not really understand how it works. As with the knowledge and skills component of competence, participants also have different attitudes towards mobile phones. Some highlighted their negative attitude towards the use of mobile phones by saying, "this thing of cell phones is not for me" (Participant 8, female). While another participant emphasised his ambivalent attitude towards mobile phones by describing his visual representation as follows:



Figure 4: Question mark and two exclamation marks

All right, this is a question mark. The cell phone is a mysterious instrument – there are a lot of things that you do not know about and then you ask why and how one does such things. Some people are afraid of a cell phone and that is why the black beads are there. On the other hand it brings you a lot of pleasure... Yes, the cell phone shows me. This exclamation mark is two exclamation marks – it gives you pleasure and that is why all the coloured beads are there. Thus there is more pleasure than question marks or mysterious things. The sticks are the contact (intercommunication) between what, how one does it and what the pleasure, advantages and disadvantages are. That is why the sticks are in this thing.

(Participant 7, male)

Although this participant was ambivalent towards the use of the phone, his positive attitude towards the mobile phone seemed to outweigh the negative. Another participant also emphasised her positive attitude towards acquiring a smart phone

But as I say I'm looking forward to learning my new phone. (Participant 2, female)

Relational Regulation Strategies

Once participants had identified their needs and subjectively evaluated their own competence to use a mobile phone, they employed different relational regulation strategies based on their own subjective evaluation of their competence. In this sample four relational regulation strategies emerged.

Independent use of the phone to regulate their environment

When participants view themselves subjectively as competent to use their mobile phones, the functions of the phone allow them to choose various options available to them to regulate themselves to address their relational needs. For example:

If I talk to them I only find out how they are doing, is everything okay? And if I send them a SMS, it is only when I couldn't get a hold of them. Then I send a SMS.

(Participant 1, female)

The different functions of the phone consequently become different avenues participants can follow to meet their social goals or needs, such as the need to communicate with their loved ones.

Postponing need gratification

This relational regulation strategy is utilized by participants who subjectively evaluate themselves as competent as well as those who do not. Postponing need gratification is motivated by a need for personal contact. In response to a question about when she bought a new phone, one participant indicated that she had been able to postpone her need gratification until a person could assist her with using some additional functions of her new phone.

I've had it for months and it's been stuck in the drawer. And then one day my niece came to visit me and I asked her: "Please, just show me how to use this new phone, so she did a lot for me. She put WhatsApp on and just showed me generally. So I know a little bit but not enough. (Participant 2, female)

Regulating the self to address the need for social connectedness was also demonstrated by another participant who calculated the correct time to phone his loved ones who live overseas.

Now when I phone them I got to try to phone at a certain time, before they go to sleep. (Participant 6, male).

Some participants preferred to wait to be assisted by a person who is subjectively viewed as more competent or willing to assist. This is illustrated by Participant 18 (female), who employed two relational strategies, postponement of needs and direct request for assistance. See quote below.

Direct request for assistance

When older people depend on others to assist them to address their needs, they are relying on other people. This is done by giving an indication to one of the younger generation that they need assistance in the example below, the older participant directly requested or instructed her grandchild to call someone for her.

I go to him (grandchild) and then I say: I want to call someone but the phone does not have that number. Then he says okay mommy just tell me what the number is. Then I say I wrote the number in a book, and I give the number to him and then he calls that person for me. (Participant 18, female)

Another participant indicated that she only used some of the functions of the phone, but relied on the younger generation to assist her with the other functions.

I can only make or receive calls, but messages I can't. My grandchild does that for me. (Participant 5, female)

Older persons also indicated that they asked specific people to assist them in using their phones. These people are specifically chosen to assist them as they are perceived as having the necessary knowledge and skills to use a mobile phone effectively. It is interesting

to note that in this sample these assistants have to be employed and live near them in order to qualify, but are not necessarily family members.

Implicit negotiation to exchange mobile phone for assistance to address needs

An implicit negotiation for assistance takes place when older participants give their mobile phones to the younger generation in exchange for buying them airtime or, as in the case of Participant 8, female, the younger people use the older person's phone. One participant pointed out that she phoned her grandchildren regularly and they called her when they wanted airtime (Participant 2, female). The older person's need for contact and to be part of her grandchildren's lives is satisfied in exchange for airtime.

Discussion

Mobile phones are used to address various needs, such as the need to access information, and the need for physical assistance. However, the most prominent theme is to maintain connection with members of the younger generation and in particular their children and grandchildren (Hoffman, Roos, Stols, & Bohman, 2015). Interestingly, these intergenerational needs seem to coincide with the different dimensions of the Intergenerational solidarity theory (Hoff, 2010; Wood & Lioussis, 2007). This theory may be used to explain relational regulation in intergenerational interactions, specifically in the types of needs older persons have (Hoff, 2010). The older persons' need to stay connected to family and friends include associational, structural and affectual solidarity (Hoff, 2010; Wood & Lioussis, 2007). Participants use their mobile phones to share activities with loved ones and to have regular interactions even though they do not live near one another. This contact allows them to feel closer to their loved ones. The use of the phone to address their needs is also very functional (Hoff, 2010) as it allows for the exchange of resources and enables participants to feel loved and supported. Older persons view their relationship with

the younger generation as very important and place certain obligations on family members to assist them in addressing their needs. Although participants seem to regulate their environment to address their needs, it is not clear how the younger generation, for its part, experiences this regulation.

The Social Convoy Model, however, only partially explains relational regulation. Although older persons in this study contacted their children and grandchildren (smaller social network), they also contacted other people in the community whom they viewed as competent to use a mobile phone, and who were available and willing to assist them. The older persons therefore also relied on an expanded network and not only on the immediate family network.

The satisfaction of social goals and psychological needs of older persons in this study help inform the understanding of relational regulation, and manner in which relational regulation manifests in their mobile phone use. Following the definition of relational regulation, the type of relational regulation strategy that is used depends on the participants' subjective evaluation of their own competence to use the mobile phone as well as the need that needs to be fulfilled (Lakey & Orehek, 2011; Lang, 2001; Leary, 2011; Koole, Kuhl, Jostmann, & Finkenauer, 2006).

Competence may be measured on three levels, namely knowledge, skills and attitudes (Le Deist & Winterton, 2005; Varela & Conroy, 2012). This participant group who was clearly divided into two distinct groups, did not differ in terms of how they subjectively viewed themselves as competent or not, despite their LSM levels. The group with perceived knowledge, skills and a positive attitude towards mobile phones employed their knowledge and skills to operate the different functions of the phone when addressing their needs. The strategy of self-perceived competence seems to enable participants to regulate themselves in

their social environment, and they have various options available to address their relational needs. Even though it was not possible to link the specific participant with the particular LSM category, it is quite possible that the participants with a higher LSM level had access to more educational opportunities. A potential threat could be that the independent functioning of older people could make them so self-reliant that they could potentially isolate themselves from other people as they could over-regulate themselves and potentially transfer this relational strategy to other relational contexts if they have a rigid approach to relational interactions (Vorster, Roos, & Beukes, 2013).

Despite having the necessary knowledge and skills to use a mobile phone effectively, some participants indicated that they had ambivalent or negative feelings towards using it. As the attitude towards mobile technology plays a crucial role in perceived competence it is essential to consider how to address this ambivalence. Attitude informs behaviour and thus a negative attitude towards mobile phones (feeling scared and frustrated) can have a negative impact on older persons' use of this technology (Forgas, Cooper, & Crano, 2011).

Even though some of the older persons were able to use some functions of their phones, they still relied on the younger people to assist them with the functions that they could not manage or who wanted to address social connected needs. On the other hand, the members of the group which does not perceive itself as competent only relied on other relational regulation strategies to address their needs, such as the need for information, need for assistance and the need for social connectedness.

The relational strategy of participants, who postpone gratification of their needs, is to learn how to time their needs satisfaction in relationships with younger people. This relational regulation strategy is in line with the cybernetic self-regulation model and problem-solving theories which involve considering options before acting (Condell et al., 2010;

MacKenzie, Mezo, & Francis, 2012). This relational regulation strategy is also positively linked to effective problem solving (Du Plooy, personal communication, Feb 2015). However, in the case of older people who depend on younger people to address their needs, postponement sometimes lasted for months, which could have potentially negative consequences if there is an urgent need to be addressed.

In line with other research, in this study the older persons requested assistance in the form of giving an instruction to the younger people to assist them (Roos, in press-a). These instructions are not posed as requests even though the younger generations comply and obey the older people. This strategy has serious implications for the needs of the older people because research has shown that the motivation of the younger generation is based on obedience and obligation (Stols, 2014). This strategy might not be sustainable as the older persons are reliant on the younger generation, and the younger generation tends to assist older persons only if they receive something in return (Oosthuizen, 2014).

The relational regulation strategy where older persons implicitly negotiate to use the phone to persuade younger people to assist them by allowing them to use the phone or to buy air time, has the potential that members of the different generations could have different expectations of being “rewarded” in satisfying the needs of the older people and potentially this vagueness could contribute to serious misunderstanding. This strategy seems less effective and there are some serious threats to addressing needs, as there is no clear communication between the parties involved.

It is important to note that although some older persons can function independently and use the mobile phone’s resources to address their needs, most of the older people in the lower LSM groups rely on other people and in particular the younger generation to assist them. Following SIGT, relational interactions can either be effective or ineffective,

depending of the subjective impact of the interacting generational members (Roos, in press b). SIGT proposes that people have relational interactions to satisfy needs and people move in relation to others to satisfy their needs (Roos, in press b; Vorster, 2011). Depending on the subjective impact of the relational interactions, older persons may experience either satisfaction or frustration of needs, which again will feed into how they regulate themselves in future in relation to other people (Roos & Du Toit, 2014).

Limitations and Recommendations

A major limitation of this study is that it includes a limited number of participants from the lower LSM group. Findings should therefore be interpreted against this background. Furthermore, since this was a secondary analysis of data obtained from a broad research question, relational regulation strategies may be explored more explicitly in future studies. Although the participants in this study were drawn from different socio-economic groups, the sample contained only two male participants, and no conclusions could be made regarding male and female differences in the use of the mobile phone. It is recommended that similar studies that explore relational regulation in older persons' use of mobile phones be undertaken in other diverse communities and should include more male participants. Future studies should also focus on the experience of younger people in relation to older people's mobile phone use and their willingness to provide support.

Conclusion

Older persons employ different relational regulation strategies in their use of mobile phones to adjust themselves in their new technological world and to address their needs. The type of relational regulation strategy followed also depends on the participants' subjective evaluation of their own knowledge, skills and attitude (competence) to use their mobile

phones. This study contributed to the existing knowledge of relational regulation and suggested four relational regulation strategies that may be employed by using mobile phones to assist older persons to address their needs. Interestingly, the LSM score of the participants seemingly did not contribute to their regulatory strategies to adjust themselves in their environment and to address their needs. Since mobile phones can play an important role in the care of older persons in assisting them to overcome certain challenges, it is therefore important to explore avenues that can enable and empower older persons to use mobile technology to effectively address their various care needs.

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CRITICAL REFLECTION

Many studies have tried to define and explore self-regulation, but very few focus on relational regulation specifically between members of different generations. Studies investigating regulating social relationships in particular are necessary because relational regulation can play a vital role in building and maintaining relationships despite scarce resources and challenges associated with age-declining health problems.

Although some studies have been done on relational regulation and older people's relational regulation strategies, the descriptions of these strategies are very vague. The studies also focused only on the regulatory process itself and did not address the use of relational regulation to promote and maintain intergenerational relationships and to address social needs (Mejía, 2011; Mejía & Hooker, 2013). Relational regulation is especially important in the case of older people because they are confronted with unique challenges. As people age, they face challenges of limited mobility and a struggle to keep autonomy. In this study older people used the functions of their mobile phones to overcome their limited mobility while still retaining their autonomy and maintaining their social relationships. The mobile phone can thus also be used to navigate their environments as well as their relationships. It is noteworthy that the participants used their phones to regulate their environment and social relationships regardless of their education level and socio-economic status. Participants who viewed themselves as competent to use mobile phones opted for smart phones, which have more functions, such as email, SMS, BBM, WhatsApp, phone calls, Facebook etc., to be able to regulate their relationships more effectively.

Although older people use relational regulation strategies to initiate contact with loved ones and therefore satisfy their need to connect, each strategy poses a potential threat to the intergenerational relationship and to older persons. Not all the strategies employed are

necessarily beneficial for the intergenerational relationship, although the older persons' needs are still being met. Some of the relational regulation strategies may impose on the other party, while another strategy will postpone need gratification. This potentially poses a threat because some of the older persons' needs could be urgent and should be met as soon as possible.

In view of this, one must be careful to suggest programmes that promote only the use relational regulation strategies in intergenerational relationships. Programmes should also focus on broadening the knowledge and skills of older people to enable them navigate themselves in the technological age, and to address declining abilities as well as various care needs.

There are already programmes in the USA that use mobile phones to facilitate intergenerational contact, and that promote the use of mobile technology by older people. Building on these, it would be beneficial to create programmes for the younger generation to teach the older generation to use the basic functions of a mobile phone, and to encourage contact via a mobile phone. Furthermore, programmes should also focus on acquiring the knowledge and skills needed to use social media to contact loved ones.

The studies by Mejía, (2011) and Mejía and Hooker (2013) used the social convoy model to explain relational regulation whereas this study used intergenerational solidarity theory (Bengtson, & Roberts, 1991) and SIGT to explore the relational regulation strategies used in social relationships (Roos, in press). In this study the older persons regulated their social environment in accordance with Intergenerational solidarity theory. As regulation is embedded in the social environment SIGT was used to explore the effectiveness of the different relational regulation theories.

The findings of this study have made a positive contribution to relational regulation literature in a developing world context and more specifically in South Africa. We now know that older persons are able to regulate their social environment despite limited resources, knowledge and skills. Further studies might focus on other contexts in which older persons regulate their relationships and on how this regulation impacts on intergenerational relationships. Additionally this study proposed a workable definition for relational regulation to be able to recognise regulating behaviour in participants, and identified four relational regulation strategies that are employed by older persons in this sample.

The findings of this study support other studies that encourage the use of mobile phones to address the care needs of older persons (Goodman, Brewster & Grey, 2004; Hoffman, Roos, Stols, & Bohman, in press; Ruxwana, Herselman, & Conradie, 2010; Van Biljon, Renaud, & van Dyk, 2013). However, before any interventions can be developed to use mobile phones in addressing older persons care needs, future studies should first explore how the younger generations experience interactions with the older persons regarding mobile phone usage.

Conclusion

There is a great deal of literature on self-regulation but limited studies on relational regulation. There are also no studies on relational regulation in older persons, in a South African context. This study therefore contributes to the literature of relational regulation in a South African context. The exploration of relational regulation in older persons' mobile phone use therefore addressed a gap in existing literature in three ways. First, it provided some insights into the concept of relational regulation and how it is currently understood and defined in literature. Second, it provided insights into relational regulation in a South African context, and lastly it introduced the four relational regulation strategies that are used to

regulate the social environment. The use of mobile technology as an effective tool to regulate intergenerational relationships despite challenges such as physical proximity and the lack of appropriate knowledge and skills to use mobile technology were also explored. It is suggested that further studies in the South African context be undertaken, with a focus on older persons' relational regulation strategies as well as relational regulation through mobile technology.

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