

**The use of a serious game to enhance psychology students' empathy and reduce
prejudice towards people with disabilities**

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Dissertation submitted in the partial fulfilment of the requirements for the degree
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Table of Contents

| | |
|---|------|
| Acknowledgements..... | iv |
| Summary..... | vi |
| Opsomming..... | viii |
| Preface..... | x |
| Solemn Declaration..... | xi |
| Letter of permission..... | xii |
| Proof of language editing..... | xiii |
| SECTION 1: INTRODUCTION AND RATIONALE..... | 1 |
| 1.1. Introduction..... | 1 |
| 1.2. Contextualisation..... | 2 |
| 1.3. Orientation and problem statement..... | 3 |
| 1.3.1. Defining disability..... | 3 |
| 1.3.1.1. The challenges associated with disability..... | 4 |
| 1.3.1.2. The role of inequality, stereotypes and prejudice in the creation of barriers..... | 5 |
| 1.3.1.3. Psychological problems associated with disability..... | 7 |
| 1.3.1.4. Intervention in intergroup attitudes to address challenges associated with disabilities..... | 9 |
| 1.3.1.5. Theoretical frameworks in addressing intergroup attitudes..... | 10 |
| i. Attachment theory..... | 10 |
| ii. Contact hypothesis..... | 13 |
| 1.3.2. Empathy..... | 14 |
| 1.3.2.1. Defining empathy..... | 14 |
| 1.3.2.2. Empathy as dynamic component..... | 15 |
| 1.3.2.3. Empathy and psychotherapeutic work with persons with disabilities..... | 16 |
| 1.3.2.4. Intervention and training considerations..... | 17 |
| 1.3.3. Technological development in education and training..... | 19 |
| 1.3.3.1. Overview..... | 19 |
| 1.3.3.2. Serious gaming..... | 20 |
| 1.4. Research paradigm..... | 22 |
| 1.5. Research design..... | 22 |

USE OF A SERIOUS GAME TO ENHANCE EMPATHY AND REDUCE PREJUDICE

| | |
|---|-----|
| 1.6. Participants and context | 23 |
| 1.7. Data collection | 24 |
| 1.8. Measuring instruments | 24 |
| 1.9. Data analysis | 26 |
| 1.10. Research questions and research hypothesis | 27 |
| 1.11. Ethical considerations | 28 |
| 1.12. Outline of the study | 33 |
| References | 34 |
| SECTION 2: ARTICLE | 47 |
| The use of a serious game to enhance psychology students' empathy and reduce prejudice towards people with disabilities | 47 |
| 2.1. Guidelines for Authors: <i>Journal of Psychology in Africa</i> | 48 |
| 2.2. Manuscript | 54 |
| Abstract | 54 |
| Introduction | 55 |
| Method | 61 |
| Results | 65 |
| Discussion | 68 |
| Conclusion | 75 |
| References | 76 |
| Tables | 86 |
| Section 3: CRITICAL REFLECTION AND REFERENCES | 89 |
| 3.1. Critical reflection | 89 |
| References | 92 |
| Addendums | 111 |

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Summary

Although much has been done in South African legislations to protect the rights of persons with disabilities, the implementation of these rights is not yet experienced in the daily lives of people with disabilities. Disability refers to any restriction or impairment to perform an activity in a manner considered normal for society. The available definitions of disability aim to explain disability in its various forms, but it is crucial to recognise that disability represents a variety of conditions and a heterogeneous population. Failing to understand this diversity leads to stereotypical views and negative attitudes, which contribute to the marginalisation of persons with disabilities.

Research shows a relationship between the development of secondary psychological problems among persons with disabilities, indicating their need for psychological services. Values such as acceptance and empathy play an important role in the therapeutic work with persons living with disabilities. However, research indicates that the empathy of therapists can deteriorate as work experience increases. It is also important for therapists to ensure that negative attitudes and prejudices found in society do not affect their work with regard to persons with disabilities. Therefore, it is important in the training of psychologists to determine how empathy can be enhanced and prejudice reduced to enable proper service to persons with disabilities.

Currently students function in a learning environment dominated by technology and technologically based training techniques such as serious gaming. An advantage of serious games is the opportunity it creates for students to experience situations that might be difficult to achieve in reality. “The World of Empa” is a

serious game focused on the care of persons with disabilities. Therefore, the aim of the study was to investigate how the serious game could be used to enhance psychology students' empathy, and reduce prejudice towards persons with disabilities.

As a randomised control trial with pre-test and multiple post-test designs, the study included an experimental group and two control groups. Non-probability sampling was used and 83 psychology students voluntarily participated. Data was collected using validated measuring instruments and was analysed using the "Statistical Package for the Social Sciences" (SPSS, standard version 22.0.1). Results showed participants having average levels of empathy, with the tendency of higher empathy among females, and strong levels of prejudice. The serious game showed no significant long-term effects, but slight short-term effects in the lowering of prejudice and enhancing participants' abilities to transpose themselves imaginatively into the experiences of others. These findings echo views in literature of empathy as a dynamic component that can only be facilitated in some degree and that the amount of exposure through contact with a specific group might influence levels of prejudice. These findings can hold training implications but future research considerations are recommended.

Keywords: empathy; prejudice; serious games; persons with disabilities; psychologists

Opsomming

Suid-Afrikaanse wetgewing dra baie by tot die bevordering van die regte vir die beskerming van persone met gestremdhede. Die implikasies van hierdie regte is egter steeds nie die realiteit van die alledaagse bestaan van mense met gestremdhede nie. Gestremdheid verwys na enige beperking in die vermoë van 'n mens om 'n aktiwiteit te doen op die manier wat die samelewing normaal ag. Beskikbare definisies wend pogings aan om gestremdhede te verklaar, maar dit is noodsaaklik om te erken dat hierdie definisies 'n verskeidenheid toestande en 'n heterogene populasie verteenwoordig. Die ontkenning van so 'n diversiteit lei tot stereotipering en negatiewe houdings, wat op hul beurt bydra daartoe dat persone met gestremdhede deur die gemeenskap uitgesluit word.

Navorsing dui op 'n verband tussen die ontwikkeling van sekondêre psigologiese probleme by gestremdes wat hulle motiveer om psigoterapie te ondergaan. Empatie en aanvaarding is noodsaaklike waardes in die psigoterapeutiese werk met gestremdes, maar navorsing toon egter dat sielkundiges se empatie kan verminder soos wat werkservaring toeneem. Dit is belangrik dat sielkundiges nie duld dat lae empatie en vooroordeel uit die gemeenskap hulle werk negatief beïnvloed nie. In die opleiding van sielkundiges is dit daarom belangrik om te ondersoek hoe empatie verhoog en vooroordeel verlaag kan word om voldoende terapeutiese intervensie aan persone met gestremdhede te bied.

Hedendaagse studente se leeromgewing word oorheers deur tegnologiese invloed met opleidingstegnieke soos *serious gaming*. 'n Voordeel van hierdie tipe elektroniese spel is die geleentheid wat dit studente bied om blootstelling aan situasies te kry wat in praktyk moeilik kan wees. "The World of Empa" is 'n *serious*

game wat fokus op die sorg van gestremdes deur die speler blootstelling te gee aan verskeie karakters met gestremdhede. Die doel van hierdie studie is dus om te bepaal hoe 'n *serious game* gebruik kan word om sielkundestudente se empatie teenoor mense met gestremdhede te verhoog en vooroordeel te verlaag.

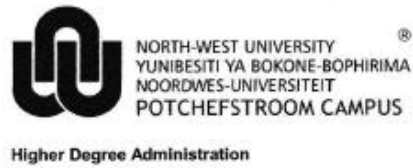
Die ontwerp van hierdie ewekansig beheerde steekproef bestaan uit 'n voortoets, direkte natoets en retensietoets vir die eksperimentele groep en twee kontrolegroepe. 'n Beskikbaarheidsteekproef is gebruik en 83 sielkunde studente het vrywillig deelgeneem. Die data is versamel deur die gebruik van geldige meetinstrumente en analise is gedoen deur die gebruik van 'n statistiese program (SPSS, standaard weergawe 22.0.1). Die resultate het gedui op gemiddelde vlakke van empatie, met die tendensie van effens meer empatie en sterk vlakke van vooroordeel onder vroulike deelnemers. Die spel het geen beduidende langtermynveranderinge aangedui nie, maar klein korttermynskuiwe is opgemerk in die vermindering van vooroordeel en die verbetering van deelnemers se vermoë om hulself in te beeld en in te leef in die ervaringe van ander. Hierdie resultate bevestig sienings in die literatuur van empatie as 'n dinamiese komponent wat bemiddel kan word, maar nie aangeleer kan word nie. Dit bevestig ook die standpunte in die literatuur ten opsigte van die kontakhipotese dat die aantal ervaring en kontak met 'n spesifieke groep vlakke van vooroordeel kan beïnvloed. Hierdie bevindinge kan praktiese en teoretiese implikasies vir opleiding inhou, maar verder navorsingsoorwegings word egter aanbeveel om verdere duidelikheid te kry.

Sleutelwoorde: empatie; vooroordeel; *serious games*; persone met gestremdhede; sielkundiges

Preface

- This dissertation is in article format complying with the requirements of rules A.5.4.2.7 as determined by the North-West University.
- The referencing and editorial style of this dissertation conform to the guidelines set out in the Publication Manual (6th edition) of the American Psychological Association (APA). The article will be compiled according to the guidelines of the journal to which the article will be submitted.
- The article will be submitted for possible publication in the *Journal of Psychology in Africa*.
- In order to present the dissertation as a unit, the page numbering is consecutive, starting from the introduction and proceeding to the references.
- Prof Esmé van Rensburg and Dr Paula Sterkenburg, co-authors of the article comprising this dissertation, have provided consent for the submission of this article for examination purposes as partial fulfilment of the requirement of the degree Magister Artium in Clinical Psychology.

Solemn Declaration



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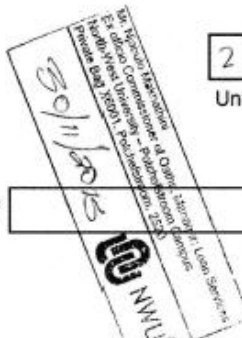
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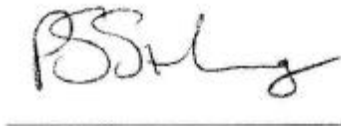
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Prof E van Rensburg

Supervisor and co-author



Dr P Sterkenburg

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DECLARATION BY LANGUAGE EDITOR

I hereby declare that I have language-edited the following dissertation by Linda Olivier (student number 20267932), submitted in the partial fulfilment of the requirements for the degree Magister Artium in Clinical Psychology at the Potchefstroom Campus of the North-West University to the approval of the student and her supervisor:

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The use of a serious game to enhance psychology students' empathy and reduce prejudice towards people with disabilities

SECTION 1: INTRODUCTION AND RATIONALE

1.1. Introduction

This study investigated the use of a serious game to enhance psychology students' empathy and reduce their prejudice towards persons with disabilities. Persons with disabilities form part of a population group that have gone unnoticed for years, and was marginalised due to certain preconceptions and insensitivity found within society (Bedini, 2000; Krahn, Walker, & Correa-De-Araujo, 2015). Unfortunately, prejudice and the inability to connect empathically to people with disabilities can cause social problems that hinder effective interpersonal resources and social support (Beelmann & Heinemann, 2014). The challenges associated with disability intersect with healthcare and counselling practices at several points and therefore psychologists need to be aware that their attitudes and behaviour may create barriers for clients with disabilities (Taylor, 2014). With the technological resources found in society, however, these personal attitudes can be addressed by digital technologies with the unique ability to influence behaviour and promote lifestyle changes via its interactivity (Neuhauser & Kreps, 2003). With the increased popularity of technology used in psychological intervention, the main objective of this investigation was to evaluate the effectiveness of the use of a serious game, "The World of Empa", in reducing prejudice and enhancing empathy towards persons with disabilities in the training of a group of South African psychology students.

This section presents an introduction to the study by providing a brief overview of the context of the study. A literature review provides an overview of the

existing research regarding the topic, and an outline of the rationale for the research paradigm as guideline for the methodology of the study is provided. A formulation of the relevant aims and hypotheses underpinning the study concludes this section.

1.2. Contextualisation

This quantitative study was done through the Faculty of Health Sciences of the North-West University in conjunction with the psychology subject groups of the Potchefstroom and Vaal Triangle campuses in collaboration with Dr P Sterkenburg of the Department of Clinical Child and Family Studies and EMGO+ Institute for Health and Care Research of the Vrije Universiteit Amsterdam. The departmental heads and lecturers from the psychology subject group at the Potchefstroom and Vaal Triangle campuses were identified as gatekeepers through whom participants were contacted. Non-probability sampling was used in this randomised control trial in order to achieve the following aims:

- What is the nature of empathy amongst senior psychology students towards persons with disabilities?
- What is the nature of prejudice amongst senior psychology students towards persons with disabilities?
- What is the effect of “The World of Empa” on the senior psychology students’ empathy towards persons with disabilities?
- What is the effect of “The World of Empa” on the senior psychology students’ prejudice towards persons with disabilities?

A quantitative study consisting out of a randomized control trial (RCT) with a pre-test and multiple post-test design to include both an experimental group and two

control groups were used to investigate the above mentioned aims. All three groups were exposed to the pre-test and immediate post-test, as well as a follow-up post-test about three weeks later.

1.3. Orientation and problem statement

Persons with disabilities have been an unrecognized population for health attention in the past, but recent intervention aims at correcting this by making the poor health of this population visible (Krahn et al. 2015). With recent attention shifting to the topic of disability, it becomes clear that the global experience of disability is too complex to be captured in a singular model or set of ideas. According to Galis (2011), studies focused on conceptualising a global phenomenon such as disability shows a shift from the medical or social construction of disability to post-modern views on how disability is conceptualised within different practices and different experiences. However, when looking at disability in general, it is important to acknowledge the variety of medical and social conditions represented by persons with disabilities as a heterogeneous population because attitudes towards persons with disabilities are often influenced by the lack of understanding this diversity (Wiggett-Barnard, 2013). These negative attitudes towards persons with disabilities hinder integration and accessibility in society and therefore contribute to the barriers experienced by persons with disabilities.

1.3.1. Defining disability

According to the World Health Organisation (WHO), disability can be defined as any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being (Oliver, 1996). The WHO published an integrated framework, called the International Classification of

Functioning Disability and Health (ICF), conceptualising disability to include bodily impairments, activity limitations, or participation restrictions in order to indicate how the interaction of having a condition-based limitation and experiencing environmental barriers results in disability (Krahn et al. 2015). With reference to the ICF framework, this study considers the definition of disability as the loss or limitation of opportunities that prevents individuals with impairments from taking part in the normal life of the community equivalent to others due to physical and social barriers (Taylor, 2014).

These limitations can refer to any number of conditions and can be present from birth or acquired during life. Individuals can be impaired physically, intellectually or sensory, with or without concurrent medical conditions or mental illness, which can be of permanent or transitory nature (Heap, Lorenzo, & Thomas, 2009). Birth defects, chronic conditions or acquired limitations are all different forms of impairment that can have a variety of implications on the functioning and living conditions of the individual. According to Krahn et al. (2015), persons with disabilities can therefore be considered as a diverse group of people who share the experience of living with limitations that result in the experiencing of exclusion from full participation in their communities. Failure to recognise the heterogeneous nature of persons with disabilities and their circumstances can influence attitudes and stereotypes towards persons with disabilities (Wiggett-Barnard, 2013).

1.3.1.1. The challenges associated with disability

Administrative measures and legislations aim in correcting the exclusion of persons with disabilities from full participation in society. South Africa is one of only a limited number of countries whose constitution included issues relating to

disability by clearly stating that no one can be discriminated against on the grounds of disability (Heap et al. 2009).

Unfortunately, in reality it seems as if these rights and legislations do not seem as equal as it does on paper. Despite several policies and legislations persons with disabilities seemingly still remain a marginalised group in South Africa that seem to face numerous challenges (Heap et al. 2009; Wiggett-Barnard, 2013).

According to Melville (2005), studies indicate that persons with disabilities generally experience significant health inequalities due to barriers in accessing effective health care services. This is also seen in South Africa where there are approximately one million children living with disabilities; many whose needs are still unmet and ignored (Saloojee, Phohole, Saloojee, & Ijsselmuiden, 2007). This supports the ICF's conceptualization model indicating how bodily impairment and participation restrictions interact with environmental barriers can contribute to disability.

1.3.1.2. The role of inequality, stereotypes and prejudice in the creation of barriers

Although research has shown that persons with disabilities face social stigmatisation, less attention is given to disability than to any other form of prejudice (Coleman, Brunell, & Haugen, 2015). A lot of time and resources are dedicated to investigating prejudice based on race or gender, while the impact of associations with disabilities in our society go unnoticed. According to Rudman, Ashmore and Gary (2001) these associations stem from socialisation processes due to living in a culture that has traditionally favoured specific groups above others. Modern media tends to stress physical attractiveness, and therefore it can be argued that society learns to

reinforce physical attractiveness and to punish and stigmatise physical disability (Murray, 1971).

These preconceptions found in society are influenced by a variety of factors, such as lack of knowledge and stereotypes within society. Negative attitudes towards persons with a disability are frequently due to a lack of knowledge and therefore it is important to build awareness about disabilities (Lindsay & McPherson, 2012). By advocating awareness about disabilities, society is equipped with knowledge to guide their actions instead of faulty stereotypical beliefs sometimes found in cultures. Stereotypical beliefs greatly influence attitudes towards persons with a disability since they are often stereotyped as incompetent, dependent, weak or lacking endurance (Coleman et al. 2015). These stereotypes clearly display negative fixed ideas relating to persons with disabilities. According to Beelmann and Heinemann (2014), prejudice can generally be viewed as any form of emotion, behaviour or attitude towards a specific group that implies negativity or ill will towards that group. According to Johnson (2011), negative attitudes towards persons with disabilities are so general that people without disabilities might not always notice it. The prejudice can have far-reaching consequences. Research report prejudice causing serious social problems such as social exclusion, health and behavioural problems, poorer chances for employment, as well as a generally more negative quality of life (Beelmann & Heinemann, 2014; Wiggett-Barnard, 2013). Therefore, stereotypical preconceptions play a significant role in the inequality experienced by persons with disabilities, which can have a tremendous impact on their psychosocial wellbeing and quality of life.

1.3.1.3. Psychological problems associated with disability

The relationship between disabilities and psychosocial wellbeing has been a concern for researchers throughout the years. Jablensky, Schwarz and Tomov (1980) reported on the concern of the WHO on the influence of disabilities on mental health, stating that almost two-fifths of all disabilities are associated with mental health disorders. Numerous studies throughout the years also clearly indicate a strong relationship between the development of secondary emotional and behavioural problems relating to various forms of disabilities (Alimovic, 2013; Carvill & Marston, 2002; Nicolson & Anderson, 2001; Taggart, Cousins, & Milner, 2007; Van Eldik, 2005). It is therefore impossible to single out a single disability as literature shows emotional and behavioural problems relating to the impact of various disabilities such as visual impairments, hearing impairments, physical disabilities and intellectual impairment.

In addition to the challenges inherent to an intellectual disability contributing to the disadvantages in life, children with intellectual disabilities are at high risk to exhibit emotional and behavioural problems that will put even more strain on their quality of life (Flitton & Buckroyd, 2002; Weisleder, 2011). According to Mazzucchelli and Sanders (2011), 40% of children and adolescents with an intellectual disability develop noteworthy mental health problems, which are three to four times higher as the risk compared to their non-disabled peers. According to Frielink and Embregts (2013) behaviour problems such as aggression, self-injury and destructive behaviours are more frequent under intellectual disabled individuals. Children with intellectual disabilities also show more social problems and attention difficulties, but it was found that their behavioural problems tend to decline while emotional problems seems to increase over time (Alimovic, 2013). The risk for the

development of mental health problems are however affected by various factors. According to Vereenoghe and Langdon (2013) disadvantageous life events and genetic vulnerability are believed to increase the risk for mental health problems amongst persons with an intellectual disability.

The increased recognition of the adverse social and psychological effects of visual impairments points to themes such as loneliness and isolation amongst persons with visual impairments (Sim & Mackie, 2015). A visual impairment not only creates a physical handicap, but also creates emotional and psychological problems such as anxiety and depression (Langdell & Langdell, 2011). This is supported by Alimovic (2013) stating that persons with a visual impairment have 26-57% more emotional and behavioural problems with the most common problems relating to attention, anxiety, decreased communication, passive aggressiveness, anorexia, enuresis and low self-esteem.

Furthermore, hearing impairments also seem to be associated with a number of psychological problems. Psychological distress and psychiatric symptoms also seem prominent among persons with hearing impairments. Unfortunately, psychological interventions for these groups are limited (Molander et al. 2015). A study in Austria also indicated children with hearing impairments having trouble with peer problems, emotional problems and conduct problems (Fellinger, Holzinger, Sattel, & Laucht, 2008). According to Davoud, Kascani and Honarmand (2014) persons with hearing disabilities are more vulnerable to mental health problems due to the severe impact on their social skills and locus of control as adolescents with hearing impairments seemed to exhibit a stronger external locus of control.

Persons with physical disabilities also seem to face practical difficulties in areas such as aggression and separation or individuation due to their lack of physical skills or physical restrictions (Jureidini, 1988). According to Amosun, Volmink and Rosin (2005) physical disabilities within the South African context indicate associated feelings of inferiority and lowered self-esteem due to confrontation to negative attitudes experienced. It is therefore apparent that disabilities as well as the inequality and prejudice associated with disabilities, can have a tremendous influence on the individual's psychosocial wellbeing, and it is this consequence that needs to be addressed.

1.3.1.4. Intervention in intergroup attitudes to address challenges associated with disabilities

According to Frielink and Embregts (2013), persons with disabilities are found within education, psychiatry, justice, and healthcare where the needs of these individuals are difficult to address within the existing system. Intervention should therefore be aimed at addressing these barriers in the system in order for society to be sensitised to the needs of persons with disabilities in order to promote equality and quality of life. The limitations caused by disabilities, as well as the consequential inequality experienced poses certain challenges for the individual. It is generally agreed upon that a substantial number of the obstacles faced by disabled individuals are generated by attitudes found in society (Vilchinsky, Findler, & Werner, 2010). These attitudes consist of different components: a cognitive component (e.g., attributing negative characteristics such as weakness to a specific group), an emotional component (e.g., liking or not liking a certain individual), and a behavioural component (e.g., showing negative behaviour like social exclusion towards a specific group) contributing to the multifaceted character of attitudes

(Beelmann & Heinemann 2014; Vilchinsky et al. 2010). A clear understanding of intergroup attitudes is therefore needed to address inequality and related problems experienced by persons with disabilities within society.

1.3.1.5. Theoretical frameworks in addressing intergroup attitudes

Intergroup attitudes can be explained and addressed from various theoretical frameworks. According to Beelmann and Heinemann (2014), some of these prominent theoretical frameworks are the general socialisation theory, social learning theory, social-cognitive development theory and the intergroup contact hypothesis. According to Vilchinsky et al. (2010) integrative examination of studies on attitudes towards persons with disabilities show a strong relation to attachment issues, and therefore regards the attachment theory as the best framework for examining individual differences and psychological processes related to interpersonal relationships and intergroup relations. That said, research suggests that the intergroup contact hypothesis is one of the best-supported theories (Beelmann & Heinemann, 2014; Hutchinson et al., 2014; LaBelle, Booth-Butterfield, & Rittenour, 2013). With regard to the prominent attention given to i) the attachment theory and ii) the contact hypothesis in research on intergroup attitudes, this study will therefore focus on these two theoretical frameworks as the main consideration in the formulation of intervention to address intergroup attitudes towards people with disabilities.

i. Attachment theory

The attachment theory, postulated by Bowlby (1969), is based on the notion that humans are social creatures with the need or closeness to a key figure (attachment figure) who can endure their feelings of security (Watt & Brittle, 2008). Attachment

refers to actively seeking and maintaining proximity to an attachment figure, which enables the individual to regulate behaviour, especially in distressing circumstances (Mash & Wolfe, 2013). This need to bond with other people is an intrinsic drive in human nature that provides a psychologically secure base from which the child can explore and achieve self-confidence (Mahler, Pine, & Bergman, 1975; Main, Hesse, & Hesse, 2011, Stevenson-Hinde, 2007; Wilson, 2009). The formulation of a secure attachment relationship with an attachment figure, who offers psychological support, enables individuals to regulate their emotional responses – not only in childhood but also as adults (Bowlby, 1969).

Although Bowlby's research was strongly focused on emotional attachment between children and their attachment to caregivers, this theory does not just apply to the development of children. According to Collins and Feeney (2000) Bowlby's theory acknowledges the importance of studying attachment processes in adulthood as the basic functions of the attachment system continue to operate across the life span and will be activated whenever felt security is threatened. The need for closeness and sustaining of safety needs are basic functions operating throughout a person's development. Once these needs are threatened, the attachment system is activated within the individual. A vital principle of the attachment theory is therefore the experience of stress or fear to activate the attachment system (Vilchinsky et al. 2010).

Early attachment patterns can be an indication to an individual's relation to others, and becomes especially significant in his reaction to stress or fear. The early attachment patterns of individuals can be seen as having a big impact on how they relate to others and how the individual will react in situations regarded as stressful or threatening. According to Stern, Borelli and Smiley (2015) the attachment theory

proposes that the patterns of caregiving behaviour shape a child's "internal working model" of the self and others, which predicts socio-emotional responses throughout development. This internal working model serves as individuals' blueprint, so to speak, to guide their relation to others (Bowlby, 1969; Stevenson-Hinde, 2007; Wilson, 2009). In the face of a stressful or threatening situation, individuals will rely on these internal working models to guide their response.

These internal working models organise cognition, affect, behaviour, and self-image in social relationships. Research by Vilchinsky et al. (2010) shows avoidance and anxiety as two prominent types of attachment styles expressed in non-disabled individuals' reactions to persons with disabilities. Disability often embodies a new and ambiguous stimulus, which might be experienced as threatening by non-disabled individuals. Therefore, contact with a person with a disability might provoke anxiety and activate these attachment-related schemas of the person's internal working model to influence attitudes towards persons with disabilities (Vilchinsky et al. 2010). Consequently, these negative emotional reactions towards persons with disabilities are rooted in early attachment relations as a spontaneous response to an unknown threat. One way of challenging these internal working models and negative attitudes relating to early attachment relations is to remove the threat of the unknown and become accustomed to disabilities. Non-disabled people might initially react with unease and rejecting feelings towards persons with disabilities but increased contact might enable them to overcome these prejudices (Vilchinsky et al. 2010). This notion of increased intergroup contact to address internal working models and negative attitudes is supported by the contact hypothesis.

ii. Contact hypothesis

Intergroup contact is a prominent field of research in the social sciences. Theories about intergroup contact became very prominent after World War II with Allport's intergroup contact hypothesis proving significantly influential by specifying important situational conditions for intergroup contact to reduce prejudice (Pettigrew, 1998). The intergroup contact hypothesis is therefore one of the most enduring theoretical perspectives on the effect of contact on intergroup relations. According to Allport's contact hypothesis the interaction between members of different groups leads to a decline in prejudiced attitudes and generally promotes positive intergroup relations (Beelmann & Heinemann, 2014). Allport believed that the positive effects of intergroup contact could only occur under the following four conditions: equal group status expected and experienced within the situation; common goals; intergroup cooperation; and the support of authorities, law, or customs of the particular society (Pettigrew, 1998).

Modern theory in attitude change towards stigmatized groups is rooted in Allport's hypothesis proclaiming that positive attitude change requires contact or interaction with the stigmatized group under equal, supportive conditions (Hutchinson et al. 2014). These favourable interactions with different groups can build positive attitudes to overcome stereotypical and prejudiced beliefs by creating a positive frame of reference to base future interactions on. According to LaBelle et al. (2013), research findings indicate that negative attitudes towards persons with disabilities are often related to mistaken or insufficient information about the disability and that increased contact with persons with disabilities could rectify misconceptions and have a positive effect on attitudes.

Positive intergroup interaction challenges misconceptions towards persons with disabilities and therefore decreases the negative impact that disabilities and the accompanied prejudice might have. The increased contact with persons with disabilities accordingly decrease anxiety and provides systemic disconfirmations of prejudice and negative expectations held (LaBelle et al. 2013). The increased contact enhances the likelihood of people without disabilities challenging misconceptions in order to be more aware and empathic towards the needs of persons with disabilities. According to a study done by Hutchinson et al. (2014) it is possible to increase the empathy of staff working with individuals with impairments through multiple and appropriate contact opportunities.

1.3.2. Empathy

1.3.2.1. Defining empathy

Empathy refers to other-orientated emotions that include emotions such as compassion and warmth, as well as the incorporation of cognitive components that arises when one values the relation with the other person (Van Tongeren, Burnette, O'Boyle, Worthington, & Forsyth, 2014). An empathic response in relation to a person with a disability will require orientation and regard for the individual's needs and emotions in order to act compassionately. Therefore, the promotion of empathy plays an important role in overcoming the inequality and challenges faced by persons with a disability due to negative attitudes found in society. Empathy can be seen as the ability being affected by and share in others' emotional state; to assess possible reasons for their emotional state and to identify with the person by adopting their point of view (Burks & Kobus, 2012). Leijssen (2004), also emphasise the understanding of the other person as an important component in helping relations, and defines empathy as getting to know another, trying to understand their situation

and reacting appropriately. Empathic response therefore includes dimensions of understanding and feeling in order to respond to another person appropriately.

This multidimensionality of empathy is explained by Baron-Cohen (2003) as the cognitive component in order to understand another's feelings from their perspective, as well as the affective component in order to generate an appropriate emotional response to the other person's emotional state. Although various definitions of empathy exist, it all boils down to one common agreement: empathy is an intra-psychic process of understanding someone else and communicating this understanding in the context of a particular relationship (Webb-Peploe & Fredman, 2015). Being able to connect empathically to others is a requirement for good interpersonal relations and effective social support as it is the interpersonal resource people use to share emotions and understanding in creating a sense of belonging. Showing an understanding of the disabled individual's situation, the ability to identify therewith and reacting accordingly, can lend the needed support to persons with a disability facing numerous challenges in an unequal society.

1.3.2.2. Empathy as dynamic component

Unfortunately, studies show that empathy can deteriorate as experience is gained. This finding is evident in studies amongst medical residents in the USA, which show that the residents' self-perceived empathy deteriorates during their experience in the medical system (Neumann et al., 2009). The experience of high levels of stress in healthcare can also contribute to the deterioration in empathy that might lead to compromised therapeutic processes (Passalacqua & Segrin, 2012). This negative relationship between empathy and experience seems not only to apply to medical staff, but also to psychologists. A study amongst psychology students at

St. John's University (New York) also showed a relationship between the increase in experience and the decrease of empathy (Camarano, 2011)

However, preliminary research suggest that empathy can be taught and conserved by using humanism-based curricula and training of medical students (Burks & Kobus, 2012). It therefore seems as if empathy is a dynamic component that can be taught and preserved. Conversely, it also seems to fade with the gaining of experience. The preservation and teaching of empathy can therefore play a significant role in preventing therapists from running out of empathy as they gain more experience in life. Various studies seem to focus on graduate students when measuring and preserving empathy is researched (Burks & Kobus, 2012; Camarano, 2011; Neumann et al., 2009). The negative impact that experience can have on empathy levels as an important construct in working with persons with disabilities will also hold implications to the psychotherapeutic work with persons with disabilities.

1.3.2.3. Empathy and psychotherapeutic work with persons with disabilities

As mentioned before, persons with disabilities are found in the education, justice, healthcare services and psychiatry where they face numerous challenges in the system. According to Vereenoghe and Langdon (2013), available mental health treatments for persons with disabilities mostly include behavioural and pharmacological approaches, but psychotherapeutic interventions have recently become more prominent. With the prejudice, inequality and behavioural problems associated with disabilities, it is no shock that persons with disabilities are a prominent population group in the practice of psychology. According to Leigh, Powers, Vash and Nettles (2004) psychologists can therefore expect to provide

psychological services to persons with disabilities, wherever they practice, with problems similar to that reported by people without disabilities who seek help. A scarcity of research exist on psychotherapy with clients with disabilities, but the limited existing research on disability and counselling suggest that many persons with disabilities favour values such as acceptance and empathy within the therapeutic approach of a person-centred approach that values principles such as acceptance and empathy (Johnson, 2011).

Person-centred psychotherapy is a theoretical perspective that made an important contribution to the field of psychology by identifying the following essential therapeutic conditions: unconditional positive regard, empathic understanding and congruence (Tickle & Murphy, 2014). These three constructs are the foundation on which person-centred therapy is based. The reason persons with disabilities exhibits a preference for a person-centred approach could be because this approach is client centred-rather than medically orientated and emphasise the personal power of the client (Johnson, 2011). These values assist the therapist to look beyond the physical limitations and focus on the person to take personal power over his life and overcome the challenges sometimes reinforced by society. This gives persons with disabilities a sense of autonomy and empowerment, which is sometimes deprived from them. The therapist holds this sense of autonomy in high regard by expressing empathic promotion of self-efficacy (Frielink & Embregts, 2013). This, in turn, emphasises the importance of empathic response in working with persons with disabilities.

1.3.2.4. Intervention and training considerations

Within psychotherapy there are theoretical and practical concerns relating to service provision for persons with disabilities. The apparent lack of appropriate training amongst mental health practitioners as well as the apparent ‘therapeutic disregard’ towards the disabled population is of concern (Vereenoghe & Langdon, 2013). Insufficient training and a disdain towards persons with disabilities are contributing to the challenges imposed on them by the system’s failure to support them. Counsellors therefore need to be made aware of the fact that their attitudes and behaviours can create barriers for clients with disabilities (Taylor, 2014).

Professionals are key figures in the intervention with persons with disabilities and therefore proper training is essential to equip staff members. Hutchinson et al. (2014) also identified the following factors associated with staff’s poor interaction with persons with disabilities: insufficient behavioural knowledge and skills, their negative emotional responses, their attitudes and the culture of services. Insufficient training and knowledge combined with negative attitudes and emotional responses therefore hinder proper service provision to persons with disabilities, and need to be addressed in the training of professionals. The assumption is that increasing staff empathy towards persons with disabilities would improve the quality of service provided and reduce restrictive practices (Hutchinson et al. 2014).

However, it is also important to consider the learning context. Not only is it important to incorporate the needed knowledge and skills for working with persons with disabilities, but it is also essential to address it in the proper learning environment. Contemporary students function in an environment dominated by technology such as computers, tablets, smart phones and social media. Incorporating these modern techniques into their education and training will also make it more relevant to their contexts and stimulate learning.

1.3.3. Technological development in education and training

1.3.3.1. Overview

The influence of modern technology in people's lives is undeniable with the use of smartphones, tablets and computers in everyday existence. According to Blumberg, Blades and Oates (2013) the popularity of digital media among children and adolescents in developed nations is incontestable. This also shapes the learning environment of the present generation of students. According to the Ludus Project (2010), people tend to absorb information more easily through interactive channels and they respond to challenges in a competitive and entertaining environment. Technological development and the long-standing efforts of combining learning and fun using modern technology, lead to the development of areas such as e-learning, edutainment, game based learning and digital game based learning (Susi, Johannesson, & Backlund, 2007). According to De Freitas and Jarvis (2007) early indications in literature show technology-based simulations and game based learning contributing to accelerated learning, increasing motivation and supporting the development of higher order cognitive skills.

With such positive contributions, these technological developments have broad application possibilities in areas such as the military, government, education, corporate and healthcare (Susi et al. 2007). A systematic literature review by Den Brok and Sterkenburg (2015) also proved the increasing popularity of using technology in psychological intervention as a unique way of making intervention interactive. Bernardini, Porayska-Pomstra and Smith (2014) also highlight the potential of game based learning with the effectiveness of a serious game to foster communication skills in autistic children. In recent research in the field of learning, prominence was given to the potential use of serious games as an interactive way to

increase the effectiveness of learning and training in modern society (De Freitas & Jarvis, 2007).

1.3.3.2. Serious gaming

Although a relatively new concept, there are many definitions for serious games found in the literature. Serious gaming is a modern training technique that has recently gained the attention of a wide variety of fields (such as psychology, sociology, computer science and pedagogy), where games can be used for professional training and not just for pure amusement (Breuer & Bente, 2010). In a generation that has been socialised with digital media, the use of serious games now makes learning an integrated experience of a person's daily life, making it more relevant and effective in learning since serious games have a broader potential in reaching children as well as adult audiences (Breuer & Bente, 2010). According to Kankaanranta and Neittaanmäki (2008), serious games can be defined as games (or game-like interactive systems) with an engaging, self-reinforcing context to motivate and educate the players. It can be of any genre, use any game technology, and can be developed for any platform.

Although numerous definitions seem to be available, most descriptions agree on a central meaning that serious games are digital games used for purposes other than just pure enjoyment (Susi et al. 2007). Surely, the general connotation to games, and especially digital games, are that of a pleasurable pass-time, but in modern society the impact of digital gaming have moved beyond mere recreation. According to Bernardini et al. (2014), digital games have increasingly been used as tools to support a wide range of activities ranging from therapeutic intervention to the training of specific skills especially targeted at patients with medical or mental

health conditions. Serious games are just one dimension of an evolving field in the digital media and computer science influencing the modern learning environment.

Moving away from the negative stigma associated with the term 'educational games', a serious game might share the same goals as edutainment and focus on the educational aspects, but it also places equal emphasis on pedagogy, simulations and the game (Ulicsak, 2010). Other than educational games, serious games have a broader potential than just addressing aspects from a curriculum, and it can reach adult audiences as well (Breuer & Bente, 2010). According to Susi et al. (2007), the addition of pedagogy (activities that educate or instruct in order to confer knowledge or skills) distinguishes serious games from other computer games.

Research has mostly been focused on the negative impact of computer games without acknowledging the numerous positive effects such as enhanced inductive reasoning and problem solving that it can have (Blumberg et al. 2013). One of the benefits of using serious games is its ability to challenge the individual's imagination by creating a fantasy on extrinsic and intrinsic levels to facilitate the learning process (Gunter, Kenny, & Vick, 2006). Other than skills development, another big advantage in the use of a serious game is the opportunity it provides to students to experience situations that might otherwise be difficult or impossible to simulate in reality due to practical implications (Susi et al. 2007). The interactive nature of serious game expose students to situations and experiences that is not always practically possible in a training programme. Serious gaming can therefore have a positive impact on the training of students by giving them a simulated experience of interaction with disabled individuals in order to address their empathy and prejudice towards persons with disabilities. The increasing prevalence of computer games amongst children and young adults, as well as the possible benefits thereof makes it

an important issue to consider in the development of society. The research paradigm underpinning this study on the use of a serious game to enhance empathy and reduce prejudice towards persons with disabilities is discussed in the following section.

1.4. Research paradigm

Researchers shape their research by applying paradigms or worldviews as a basic set of beliefs that guide actions in their investigation (Creswell, 2007). This quantitative study is based on a positivistic view characterised by empirical research where all phenomena can be reduced to empirical indicators that represent the truth (Sale, Lohfeld, & Brazil, 2002). The use of logical positivism in quantitative research utilizes experimental methods and quantitative measures in order to test hypothetical generalizations (Golafshani, 2003). According to Tuli (2011), positivistic research views the purpose of research as scientific explanation through the combination of deductive logic and precise empirical observations in order to discover and confirm a set of laws that can be used to predict general patterns. As an empirical study, this research is therefore based on the systematic collection and analysis of data collected through formal measurements (Stangor, 2011). The main objective of this quantitative study was to investigate the use of a serious game to enhance psychology students' empathy and reduce their prejudice towards people with disabilities.

1.5. Research design

Quantitative research is a form of descriptive research that is focused on the use of more formal measures such as questionnaires and systemic observation, which is designed to be subjected to statistical analysis (Glasper & Rees, 2003; Stangor, 2011). This quantitative study made use of a randomized control trial (RCT) with a pre-test and multiple post-test design, and included both an experimental group and two control groups. For the investigation at issue, the decision was made that three groups would suffice. In an RCT, individuals are randomly allocated to two or more treatment groups, which usually include a control group and one or more experimental groups (Stanley, 2007). In randomised assignment of conditions the samples are drawn from the same population and one can therefore be confident that participants in the different levels of the independent variable are, on average, equivalent in every respect except for differences that are due to chance (Stangor, 2011). The experimental group played the serious game “The World of Empa” (Sterkenburg, 2012) which was developed through the Vrije Universiteit, Amsterdam, for research purposes and is based on the theoretical foundation of attachment theory. The first control group read an information piece ‘Attachment’ (Sterkenburg, Janssen, & Schuengel, 2010) with the same theoretical information as the theoretical foundation of the serious game. The second control group received no intervention but after completion of the study, they were given the website address where they could gain access to the game.

1.6. Participants and context

The study was done through the North-West University’s Potchefstroom and Vaal Triangle campuses’ subject groups of psychology. The study was also done in collaboration with Dr P Sterkenburg from the Vrije University in Amsterdam. The prospective participants were senior psychology students consisting out of third year

and Honours students. They were contacted through the departmental heads and lecturers identified as gatekeepers. Non-probability sampling was used and participants were contacted through recruitment of volunteers in the relevant psychology classes on the Potchefstroom and Vaal Triangle Campuses of the North-West University. Participants were then randomly divided between the experimental and control groups via systematic random sampling.

1.7. Data collection

After providing informed consent, participants were required to complete a demographic questionnaire that included questions regarding age, gender, race and level of education in order to find a sample representative of the South African inhabitants. Questions were asked to determine if participants had a disability themselves or if they knew someone with a disability and the relation between them. This confounder was considered during the study and the interpretation of data as it could have had an influence on the participant's nature of empathy and prejudice. Data was collected using validated questionnaires as measuring instruments.

1.8. Measuring instruments

The following measuring instruments were administered to both the control and experimental groups.

- The Empathy Quotient (EQ) by Billington, Baron-Cohen and Wheelwright (2007) is a self-reporting, quantitative instrument that measures empathy on a cognitive and affective level. The EQ consists out of 60 items where participants must indicate on a four-point scale to what degree they agree or disagree with a specific statement. The EQ has

a high test-retest reliability measured over a period of 12 months ($r=.97$, $p<.001$) and a high internal consistency ($\alpha=.92$). The EQ was also shown to have concurrent validity (Lawrence, Shaw, Baker, Baron-Cohen, & David, 2004).

- The Interpersonal Reactivity Index (IRI) of Davis (1980) is a quantitative measurement that consists out of 28 items. It is commonly used as a self-report instrument designed to assess individual differences in empathic tendencies and is based on a multidimensional conceptualisation of empathy (De Corte et al. 2007). There are four subscales (perspective taking, fantasy, empathic concern and personal distress) to assess multiple cognitive and affective components of empathy. Cognitive dimensions consist of perspective taking and fantasizing, while affective dimensions include empathic concern and personal distress as measurement of empathy (Hawk et al. 2013). The IRI has demonstrated good intrascale and test-retest reliability, and convergent validity is indicated by correlations with other established empathy scales (Davis, 1980).
- The Implicit Association Test (IAT) of Greenwald, McGhee and Schwartz (1998) seeks to measure implicit attitudes by measuring the underlying automatic evaluation, because it assesses the association between a target-concept discrimination and an attribute dimension. It measures the implicit social preferences of participants with a categorical computer task where the strongest association between concepts are measured through reaction time (Karpinski & Steinman, 2006). There are two categories, namely 'handicapped' and 'no handicap, and two attribution categories (namely pleasant and unpleasant). In the first trial a

word appears on the screen (such as special needs, handicap, special education, dependable) and these must be must be categorised as soon as possible as ‘handicap (I test) or ‘no handicap’ (E test). In the second trial words again appear on the screen (words like laugh, rainbow, happiness, hate, sick, terrible) that should be matched as either pleasant (E test) or unpleasant (I test) as soon as possible. This is followed by a combined activity where the words must be classified anew. The testing stays the same, but then tests are just reversed: the E-test is then used for ‘handicap’ and ‘unpleasant’ while the I-test is used for ‘no handicap’ and ‘pleasant’. The IAT shows reliability in measuring the implicit cognitions amongst adults with a reliability value of $\alpha > .75$ (Greenwald, Nosek & Banaji, 2003). According to Bluemke and Friese (2008) flexibility, reliability and validity are acknowledged as valuable features of the IAT.

1.9. Data analysis

All data were analysed using a software program ‘Statistical Package for the Social Sciences’ (SPSS, standard version 22.0.1, 2014). In order to achieve research aims one and two, descriptive statistics, means, skewness and kurtosis were used to analyse the data. According to Steyn, Smit, Du Toit and Strasheim (1994) the mean is the best measure of locality and is used to indicate the mean score of the sample on each subscale of the measuring instruments. This gives an indication of the central tendency while the standard deviation gives information concerning the distribution of the individual values around the mean. The skewness of the distribution gives information regarding the symmetry of the distribution while the kurtosis refers to the vertex or flatness of the distribution in the middle (Huysamen, 1996).

The *d*-scores were calculated for the IAT according to the steps described by Greenwald et al. (2003). Subsequently a t-test and ANOVA were performed to determine the effects of demographical variables. Hierarchical linear models (HLM) or mixed models were used in order to determine differences between groups and over time. The use of HLM also took the dependence of data on the same participants into account. This form of analysis also makes it possible to handle missing data where not all participants took part in all three measurements.

1.10. Research questions and research hypothesis

Based on the background information given, the following research questions were formulated in guiding this study:

- What is the nature of empathy amongst senior psychology students towards persons with disabilities?
- What is the nature of prejudice amongst senior psychology students towards persons with disabilities?
- What is the effect of “The World of Empa” on the senior psychology students’ empathy towards persons with disabilities?
- What is the effect of “The World of Empa” on the senior psychology students’ prejudice towards persons with disabilities?

No hypothesis was formulated for the first two research questions due to the exploratory nature of the study. The following research hypothesis was formulated for third and fourth research questions of this study:

- By exposing South African psychology students to “The World of Empa”, it is expected that the intervention will lead to the lowering of prejudice and enhancement of empathy towards persons with disabilities

1.11. Ethical considerations

Ethical approval was requested under the umbrella project, led by Dr A W Nienaber, with the following ethics number and title:

NWU-00125-11-A1 – *Bio-psychosocial well-being interventions for challenged, marginalized and vulnerable individuals, groups and communities*

The purpose of the umbrella project is to develop and evaluate well-being interventions for different individuals or groups within the broader South African context. These interventions aim to improve the well-being and to empower individuals or groups for better psychological, social and physical functioning. This study might also assist in the development of future intervention programs relating to the well-being of the disabled in the South African context.

The following key ethical principles are acknowledged:

- **Professional competence**

The researcher is suitably qualified and technically competent, which is demonstrated by academic qualifications. The researcher also has experience with “The World of Empa” as well as the measuring instruments in order to assist the participants with any questions they might have had. In order to ensure scientific integrity of the protocol and the responsible implementation of that protocol, the

research was done with the input of a South African- based supervisor from the North-West University, as well as an international co-supervisor who was part of the development of “The World of Empa”. In order to ensure competency in data analysis, the Statistical Consultation Services of the North-West University was consulted for statistical analysis services.

- **Scientific integrity**

A sound quantitative research design and methodology was guided by the specific aims of the study in order to obtain reliable and valid data. Using validated measuring instruments, useful knowledge was obtained without exposing participants to unnecessary risk.

- **Relevance and value**

In addressing the stereotypes and prejudice that might marginalise persons with disabilities in society, this study is relevant and responsive to the broader health and well-being needs of the people of South Africa. The anticipated contribution to generating knowledge on empathy and prejudice might be helpful to stimulate future intervention programs to improve the addressing of the disabled’s needs in the South African context.

- **Respect for persons**

The dignity, well-being and safety of all research participants are of utmost importance and therefore participation took place in a safe and secure venue on campus and personal details was kept confidential in order to protect participants. Any possible personal reactions to the project is also respected and therefore

counselling services was made available for any concerns participants might have in reaction to the intervention.

- **Distributive justice and inclusion criteria**

Recruitment, selection, exclusion and inclusion of participants were just and fair, based on sound scientific and ethical principles. Persons were not excluded unreasonably or unfairly on the basis of any of the prohibited grounds for discrimination: race, age, sex, sexual orientation, disability, education, religious beliefs, pregnancy, marital status, ethnic or social origin, conscience, belief or language. The criterion for inclusion is purely based on the nature and aim of the study. Participants must be senior students of the North-West University who is either busy with their third year, or Honours degree in psychology at the Potchefstroom or Vaal Triangle campuses. Participants had to be fluent in English in order to complete the questionnaires. Therefore, a proficient ability in the understanding and communication of English acted as the only exclusion guideline the nature of “The World of Empa” and the measuring instruments. Participants participated voluntarily and any need displayed by participants to withdraw was respected.

- **Informed consent**

Participants for this study was sampled by giving information through to third year, and Honours students in the psychology classes at the Potchefstroom and Vaal Triangle campuses of the North-West University by promoting the study in their classes. Various lecturers involved with the specific year groups was selected as gatekeepers to act as mediators between the students and the researcher. With the permission of the gatekeepers, the researcher promoted the study in their classes and

left information with the mediators for students who were interested. The students could then contact the researcher electronically via email. Participants were required to sign an informed consent form before beginning participation in the project. Voluntariness and informed choices were supported by the informed consent process, which took place before the research started, and was affirmed during the course of the study in order to commit to an ongoing consent process. Participants were informed that they have the choice to withdraw from the study at any given moment without needing to give a reason for doing so. They could also request to have their data withdrawn from the project at any given time. The study leader, project leader and researcher were not involved with participants in any capacity in order to avoid any undue influence. Participants were assured that all data would be kept confidential under the secure control of the North-West University.

- **Privacy and confidentiality**

Only partial anonymity was possible as instruments were administered electronically in group sessions in a computer room. Participants have the right to privacy and confidentiality and therefore they were ensured that all material would be treated anonymously and confidentially. In order to ensure confidentiality, the researcher left contact details for the students in class to contact the researcher by e-mail if they had any questions or if they were interested in participating in the research. No identifying particulars were published. All questionnaires or notes were locked in a cabinet. After completion of the study and publication, all documents and confidential material is stored in a safe place at the North-West University's Potchefstroom Campus for a period of six years as required by ethical stipulations. Data stored electronically is protected by a password.

- **Risk of harm and likelihood of benefit**

This was a low risk study with minimal risk to human participants, as validated measuring instruments were used. Participants were seated on a chair and no excessive movement were required. The study was done in one of the computer rooms on the Potchefstroom Campus where all safety measures were adhered to according to the safety regulations and standards set by the North-West University. The participants were seated at the computer for an hour, with a very small chance of exhaustion. There was a small risk in the unlikely event of a participant being troubled by content in the game, but they had the opportunity to contact the researcher with any questions and concerns. The researcher then organized counselling services for any participant that requested it. Participants could however benefit from the study, as they were exposed to modern technology that might enhance their own knowledge and awareness. Through the exposure to the study and the serious game, students might become more aware of the challenges faced by persons with disabilities in their community and possibly even develop empathy towards these individuals. Stigmatizing of a vulnerable group such as persons with disabilities might also decrease on campus.

- **Publication of results and feedback**

The principal investigators will publish the research results, whether positive or negative, in a timely, accessible, responsible and competent manner. Participants have the individual rights to feedback on their involvement in the research and any outcomes there might be. After completion of the project, feedback was given through to participants electronically via e-mail. Participants did not receive any

remuneration for their participation in the study, as there were no extra expenses for them to participate in this study.

- **Choice and format of research report**

This research report consists of three sections: Section I consists of a literature study on the role of empathy in working with disabled person and the possibility of enhancing empathy through a serious game. Section II provides a research article that will be presented for publication in the *Journal of Psychology in Africa* (JPA), and Section III provides a critical reflection on the research study

1.12. Outline of the study

Section I presents an overall introduction and contextualisation of the study, followed by the literature review and rationale for this study. In Section II the guidelines used by the author, as required by the *Journal of Psychology in Africa*, are outlined. This is followed by the author's article: *The use of a serious game to enhance psychology students' empathy and reduce prejudice towards people with disabilities*. Section III presents a critical reflection by the researcher on the current study before concluding with the complete reference list and addendums.

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SECTION 2: ARTICLE

The use of a serious game to enhance psychology students' empathy and reduce prejudice towards people with disabilities

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2.2. Manuscript

Abstract

This study investigated the nature of empathy and prejudice of senior psychology students towards persons with disabilities, as well as the use of a serious game to enhance empathy and reduce prejudice. A randomised control trial with pre-test and multiple post-test design was used. Availability sample (N=83) of psychology students from the North-West University was divided into an experimental and two control groups. Data was collected using the Empathy Quotient, Interpersonal Reactivity Index and Implicit Association Test. Data was analysed using 'Statistical Package for the Social Sciences'. The results showed average levels of empathy and strong prejudice with slight short-term effects in prejudice and sub-scale measurements of empathy after intervention. A slight improvement was noted in participants' ability to transpose themselves imaginatively into the experience of disabled characters. These findings contribute to the understanding of empathy as dynamic component that can have training implications. Future research considerations are recommended.

Keywords: Empathy; prejudice; serious games, persons with disabilities, psychologists

Introduction

During the 1990s South Africa experienced transformation on various levels, and even brought forth a new constitution that aimed to liberate the rights of persons with disabilities – enabling them to compete more equitably for healthcare funding and raising awareness for their needs (Kromberg et al. 2008). South Africa reached new frontiers by being one of only a few countries to include disability issues within their constitution by enshrining civil and political rights for persons with a disability, as well as rights concerning everyday existence, such as education, health, housing and social assistance (Heap, Lorenzo, & Thomas, 2009). Heap et al. (2009) reported that much has been done in protecting the rights of persons with a disability in terms of legislation and administrative measures, but the reality of the implementation of these rights is not yet experienced in the day-to-day level of the social lives of disabled South Africans, as they remain marginalised in mainstream society. Wiggett-Barnard (2013) also reports how persons with disabilities are under-represented in South African companies despite the various legislations and policies aimed to promote equality. Thus, these ideals and aspirations are still far removed from the reality as persons with disabilities perform far worse on several indicators of living conditions in both high and low income countries, where they are often marginalised (Loeb, Eide, Jelsma, Toni, & Maart, 2008).

The Challenges Associated with Disability

According to the World Health Organisation (WHO), disability can be defined as any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being (Oliver, 1996). Even though definitions aim to explain disability and the various types, it is important to recognise that disability represents a range of medical and social conditions and a

heterogeneous population, and failing to understand this diversity leads to stereotypical views that can negatively influence attitudes towards persons with disabilities (Wiggett-Barnard, 2013). As a marginalised group, the accessibility to basic services in South Africa specifically also seems to be a problem to persons with disabilities (Heap et al. 2009). Numerous studies indicate that South African health care is still a concerning factor relating to ineffectiveness, barriers to care and unmet health needs due to an unequal and ineffective health system (Goudge, Gilson, Russell, Gumede, & Mills, 2009; Ruff, Mzimba, Hendrie, & Broomberg, 2011; Xaba, Peu, & Phiri, 2012). Therefore persons with disabilities are constrained even more due to the fact that their needs are not met thus making it difficult for them to function as effectively as others in society.

Studies indicate that persons with disabilities experience health inequalities caused by obstacles such as discriminatory attitudes that they face in accessing effective health care services (Melville, 2005). Negative attitudes towards individuals with disabilities can therefore cause serious social and psychological problems without the health care professional even realising it. Furthermore, negative attitudes towards persons with disabilities are so general that it might not always be noticed by people without disabilities – leaving persons with disabilities feeling marginalized by society due to barriers that inhibit their lives (Johnson, 2011). These negative attitudes can lead to feelings of loneliness, fear, isolation, the need for acceptance and various other psychosocial problems.

The need for psychological help due to mental health problems is therefore just as great for persons with as for persons without disabilities. Research shows that learning disabilities (Silver, 1981; Taggart, Cousins, & Milner, 2007), hearing impairment (Danermark, 1998; Fellingner, Holzinger, Sattel, & Laucht, 2008; Van

Eldik, 2005), intellectual disabilities (Alimovic, 2013; Carvill & Marston, 2002; Gagliardi, Martelli, Tavano, & Borgatti, 2011; Taggart, Taylor, & McCrum-Gardner, 2010), spasticity (Nicolson & Anderson, 2001), and visual impairment (Eckerle et al. 2014; Pinquar, & Pfeiffer, 2014) are all related to the development of secondary emotional and behavioural problems. In addition, genetic vulnerability and unfavourable life events amongst persons with disabilities increase the risk of psychological problems (Vereenoghe & Langdon, 2013). In addition, children with developmental disabilities are more at risk for the development of emotional and behavioural problems compared to their peers without a disability (Mazzucchelli & Sanders, 2011). Thus, psychologists can expect to provide psychological services to persons with disabilities with problems similar to that reported by persons without disabilities who seek help (Leigh, Powers, Vash, & Nettles, 2004). Empathy can be considered as an important construct in the providing of psychological services.

Empathy

Persons with a disability value principles such as acceptance and empathy within the psychotherapeutic approach (Johnson, 2011). Empathy refers to the capability of being affected by and share in another's emotional state, and assessing possible reasons for their state to identify with the person by adopting his point of view (Burk, & Kobus, 2012). Leijssen (2004) also highlights the understanding of other as an essential element in helping relations, and defines empathy as getting to know another, trying to understand them and their situation and reacting fittingly. According to Eriksen and McAuliffe (2006), empathy is seen as one of the key characteristics of student counsellors to become effective counsellors. For a therapist working with a client with a disability, this means that the therapist should move

beyond the negative attitudes and stereotypes found in society towards trying to truly empathize and understand the context of the person with a disability

Unfortunately, it seems as if empathy can deteriorate as clinicians gain experience in the health service (Neumann et al. 2009). This negative relationship between empathy and experience was also seen in a study amongst psychology students at St. John's University (Camarano, 2011). In a profession such as psychology, empathy is considered a crucial value in psychotherapy with persons with disabilities (Johnson, 2011). Considering the negative correlation between experience and empathy, as well as the importance of empathy in therapy, this study will focus on empathy and the enhancement thereof in the training of psychology students. Personal attitudes are another important aspect to be considered in the training of psychology students.

Prejudice

One of the barriers often cited as contributing to health inequalities experienced by persons with a disability concerns the personal attributes (e.g. discriminatory attitudes, and a lack of appropriate knowledge and skills) of health care professionals (Melville, 2005). Although staff attitudes towards disabled individuals with behavioural challenges may be a crucial part of a positive support culture, very little research has focused on how the held prejudice and negative attitudes can be changed (Hutchinson et al. 2014). Persons with impairments are restricted due to stigmatization, prejudice and isolation from services. It is therefore apparent that interventions should be developed with as goal to change staff attitudes towards persons with a disability. This can be achieved with the use of appropriate training techniques relevant to the learning environment.

Training and the Role of Technology

In addressing the training of psychology students, it is important to consider the learning context. Not only is it vital to integrate the needed knowledge and skills for working with persons with disabilities, but it is also important to address it in the appropriate learning environment. Currently students function in an environment dominated by technology (e.g. computers, tablets, smart phones and social media). Serious gaming is one such a modern training technique that has recently gained the attention of a wide variety of fields, where games can be used for professional training and not just for pure amusement (Breuer & Bente, 2010). Serious games can be defined as games (or game-like interactive systems) with an engaging, self-reinforcing context to motivate and educate the players (Kankaanranta & Neittaanmäki, 2008). It can be of any genre, use any game technology, and be developed for any platform. Incorporating serious gaming into student training will stimulate learning.

There are various applications of related, and sometimes overlapping, fields such as e-learning, edutainment games and game based learning that fall within the field of digital gaming (Susi, Johannesso, & Backlund, 2007). Serious games, however, move away from the negative stigma associated with the term ‘educational games’, as it not only focuses on the educational aspects, but places equal emphasis on pedagogy, simulations and the game (Ulicsak, 2010). Other than educational games, serious games have a broader potential than just addressing aspects from a curriculum, and it can reach adult audiences as well (Breuer & Bente, 2010). Serious games therefore are used for purposes other than just pure enjoyment by incorporating pedagogy and simulations into the game to reach a broader audience (Ulicsak, 2010).

According to Blumberg, Blades and Oates (2013) research frequently highlights the negative impact of computer games without recognizing the many advantages. Other than skills development and problem solving abilities, one of the biggest advantages in the use of a serious game is the opportunity it gives students to experience situations that might be difficult or impossible to get in reality due to practical implications (Susi et al. 2007). The benefits of serious gaming can therefore be used for the training of psychology students in order to address prejudice and empathy towards persons with disabilities by giving them the exposure to the digital experience with persons with different disabilities.

“The World of Empa” (Sterkenburg, 2012) is a serious game focused on the care of persons with disabilities. The player encounters a number of characters, namely a blind boy, a girl with multiple disabilities, a father, mother, baby and a boy with no disabilities. It is a computer game comprising six levels of principal educational situations, and questions are asked about the foremost educational and interaction problems encountered by the characters. Multiple answers are given as possibilities and if players respond by choosing an option reflecting an empathic and sensitive attitude, they are rewarded with points and moves on to the next level. If players do not respond empathic and sensitive, they lose points and must try again to complete the level. Throughout the game, players can see their score and if the game is finished, players receive feedback on their measure of sensitivity, empathy and responsiveness. The goal of the game is to discover the effect of sensitive and empathic reactions to situations (Sterkenburg, 2012).

Aims of the Study

This study aimed to investigate the nature of South African psychology students' empathy and prejudice, as well as how it might be influenced with the use of the serious game by investigating the following four research questions: 1) What is the nature of empathy amongst senior psychology students towards persons with disabilities? 2) What is the nature of prejudice amongst senior psychology students towards persons with disabilities? 3) What is the effect of "The World of Empa" on the senior psychology students' empathy towards persons with disabilities? 4) What is the effect of "The World of Empa" on the senior psychology students' prejudice towards persons with disabilities?

Method

Research Design

This quantitative study consisted out of a randomized control trial (RCT) with a pre-test, immediate post-test and follow-up design. The RCT consisted out of one experimental group and two control groups. The experimental group played the serious game "The World of Empa". The first control group read case studies with case studies and background information titled 'Attachment' (Sterkenburg, Janssen, & Schuengel, 2010) with the same theoretical foundation as the serious game. The second control group received no intervention. All three groups were exposed to the pre-test and immediate post-test, as well as a follow-up post-test about a month later. Both control groups received access to the game after the follow-up measure.

Participants and Context

The study was done through the North-West University's Faculty of Health Sciences, and specifically the subject groups psychology of the Potchefstroom and Vaal Triangle campuses, South Africa, in collaboration with the Vrije Universiteit Amsterdam, The Netherlands. Departmental heads and lecturers involved with the senior classes of the psychology subject groups at the Potchefstroom Campus and the Vaal Triangle Campus were identified as gatekeepers through whom prospective participants were contacted during a period of two months. Non-probability sampling was used and participants were contacted through recruitment of volunteers in the relevant psychology classes on the Potchefstroom Campus and the Vaal Triangle Campus of the North-West University. It was important that participants were fluent in English due to the nature of the serious game and measuring instruments. With the first round of data collection 100 students from the two campuses responded to participate voluntarily. With the course of the study, however, 17 students withdrew leaving 83 participants who participated in all the phases of the study. Although many students did not provide a reason for their withdrawal, some did however report transport problems and difficult academic schedules with the start of semester tests. Using electronic systematic random sampling, the participants were randomly divided between the experimental and control groups via electronic systematic random sampling.

Data Collection and Measuring Instruments

After providing informed consent, participants were required to complete a demographic questionnaire that included questions regarding age, gender, race and level of education. Questions were asked to determine if the participant had a

disability themselves or if they knew someone with a disability, and the relation between them. These variables were examined and added as a confounder where necessary. Data was collected using the following validated questionnaires as measuring instruments with both the experimental and control groups:

The Empathy Quotient (EQ) is a self-reporting, quantitative instrument consisting out of 60 items where participants must indicate on a four-point scale whether they agree or disagree with a specific statement (Billington, Baron-Cohen, & Wheelwright, 2007). The EQ measures different aspects of empathy on a cognitive and affective level and it has a high test-retest reliability measured over a period of 12 months ($r=.97$, $p<.001$) and a high internal consistency ($\alpha=.92$).

The Interpersonal Reactivity Index (IRI) is a quantitative measurement consisting out of 28 items (Davis, 1980). There are four subscales (Perspective taking, Fantasy, Empathic Concern and Personal Distress) to assess multiple cognitive and affective components of empathy. Cognitive dimensions consist of Perspective Taking and Fantasizing, while affective dimensions include Empathic Concern and Personal Distress (Hawk et al. 2013). This frequently used self-report instrument is based on a multidimensional conceptualisation of empathy and is designed to assess individual differences in empathic tendencies (De Corte et al. 2007). The IRI has demonstrated good intrascale and test-retest reliability, and convergent validity is indicated by correlations with other established empathy scales (Davis, 1980).

The Implicit Association Test (IAT) of Greenwald, McGhee and Schwartz (1998) seeks to measure implicit attitudes by measuring the underlying automatic evaluation, as it assesses the association between a target-concept discrimination and

an attribute dimension. It measures the implicit social preferences of participants using a categorical computer task where the strongest association between concepts are measured through reaction time (Karpinski & Steinman, 2006). The IAT shows reliability in measuring the implicit cognitions amongst adults with a reliability value of $\alpha > .75$ (Greenwald, Nosek, & Banaji, 2003). According to Bluemke and Fries (2008) flexibility, reliability and validity are acknowledged as valuable features of the IAT.

Data Analysis

All data were analysed by the Statistical Consultation Services of the North-West University, Potchefstroom Campus, using a software program 'Statistical Package for the Social Sciences' standard version 22.0.1, 2014 (Field, 2009). In order to achieve research aims one and two, descriptive statistics, frequencies, means and standard deviations were used to analyse the data. According to Steyn, Smit, Du Toit and Strasheim (1994) the mean is the best measure of locality to give an indication of the central tendency while the standard deviation gives information concerning the distribution of the individual values around the mean.

The *d*-scores were calculated for the IAT according to the steps described by Greenwald et al. (2003). Successively a t-test and ANOVA were done to define the effects of demographical variables. Hierarchical linear models (HLM)/mixed models were used to determine the differences between groups and over time while taking the dependence of data on the same participants into account. The use of this analysis also enables the handling of missing data where not all participants took part in all three measurements.

Ethical Considerations

The Faculty of Health Sciences Research Ethics Committee evaluated and approved the merits of this study and ethical approval (NWU-00125-11-A1) was granted. An informed consent form was completed by the participants stipulating the details of the study and their voluntary participation in the project would not receive any form of compensation other than a certificate of participation, which was emailed to them.

Results

The participants (N = 83) were randomly and electronically divided into the following three groups: an experimental group (n = 26); a control group that received a text to read (n = 26); a control group that received no intervention (n = 31). Table 1 provides an overview of the demographical information of participants indicating that the vast majority of participants (78%) were females with the majority of participants ranging from the ages of 18-21 years (49%) and 22-25 years (39%). Race was indicated by 60% of participants as Caucasian, 31% Africans and a mere 9% being coloured.

For the purpose of this study, participants' contact and experience with persons with disabilities or own disabilities were also examined. Only three (3) of the participants had a disability themselves, two (2) individuals reported having ADHD and one (1) as having a hearing impairment. The vast majority of participants (84%) had no experience working with persons with disabilities. Exposure to persons with disabilities seemed limited with only 38% of participants having a family member with a disability or knowing any other person with a disability (45%). The amount of contact the 37 participants had with a non-related

person with disabilities was noted as follows: noted as not applicable (n = 1); once or twice a year (n = 6); once or twice a month (n= 10); 1-2 times a week (n = 10) and a daily basis (n = 10).

[Insert Table 1 here]

The sub-scales of the IRI (Fantasy, Perspective, Empathic Concern and Personal Distress) were addressed separately during data analysis for the purpose of reliability. According to Field (2009), the Cronbach alpha should be applied separately to the subscales if the used questionnaire has subscales. The Cronbach alpha estimates the reliability by determining the internal consistency of the test or the average correlation of items within the test (Nunnally, & Bernstein, 1994). Table 2 gives an indication of the reliability of the measurements with overview of the Cronbach alpha of the EQ and subscales of empathy measured in the IRI. Although the general accepted Cronbach alpha value of 0.8 is considered appropriate for cognitive tests, values below even 0.7 can realistically be expected in the measurement of psychological constructs due to the diversity of the constructs being measured (Field, 2009).

As indicated in Table 2, a strong sense of reliability and internal consistency (Cronbach alpha = 0.82) was seen in the EQ. All the subscales of the IRI, however, showed a poor internal consistency with some items on the various subscales that had to be excluded in order to promote internal consistency. The items that negatively influenced the internal consistency of scales were removed before continuing further. As the IAT has no questions and sub-scales, it is not possible to measure the IAT's reliability the same way as the EQ and IRI. The IAT only gives one score based on the whole measurement and does not have any loose standing questions to score.

Table 2 also gives us an indication of the nature of empathy and prejudice as indicated by the means scored on the pre-test. Slightly low to average empathy levels were noted on the EQ (mean = 46,57) while the IRI sub-scales (measured on 5-point scales) indicated moderate levels of empathy (means > 3,00). Participants' nature of prejudice showed strong negative associations with persons with disabilities (mean = -0.84) before any intervention.

[Insert Table 2 here]

The demographics did not show significant associations with the data, except for gender. Gender was the only demographical factor that showed significance influence on empathy scores as indicated in Table 3. The effect sizes of measurements associated with empathy (the EQ and three sub-scales of the IRI) showed women scoring higher while Fantasy and Prejudice remained unaffected by gender differences.

[Insert Table 3 here]

Furthermore, it is only possible to draw conclusions about the population from which a random sample was drawn. However, in this case, an availability sample was used and emphasis will be given to the interpretation of effect sizes and practical significance while p-values are reported for the sake of completeness. Table 4 gives an overview of the means between groups to give an indication of practical significance while Table 5 gives the effect size over time for the means in Table 4. Although Table 4 and Table 5 should be considered together, it presented separately for clarity and ease of reading. When comparing the experimental group with the two controlled groups over time, all three groups were relatively comparable with average scores on empathy measured by the EQ (Table 4) with no significant

changes seen over time (effect size in Table 5). The experimental group did however show a practical significant change ($d = 0.49$) in the Fantasy sub-scale of the IRI on the immediate post-test while the controlled group receiving no intervention showed no significant changes over time (Table 5). The controlled group required to read did however score practically higher on the first measurement of all IRI sub-scales but showed a medium practical significant decline on the follow-up measurement a month later (Table 5), especially in Empathic Concern.

All three groups also showed comparable levels of prejudice with strong negative associations regarding persons with disabilities on the pre-test (means in Table 4). The negative value indicates a strong association between constructs of disability and unpleasantness. The closer the value is to 0, the less prejudice and therefore the mean scores indicate a strong negative attitude towards persons with disabilities. The experimental group showed no significant effect in prejudice over time, but both control groups showed significant declines in prejudice with the post-test (Table 5).

[Insert Table 4 here]

[Insert Table 5 here]

Discussion

Empathy and acceptance plays an important role in the therapeutic work with persons with disabilities who seek intervention for secondary psychological problems caused by the limitations experienced in their daily lives (Johnson, 2011).

Unfortunately, a negative correlation exists between therapists' empathy and their gaining of experience (Camarano, 2011). Attention is drawn to the possibility of influencing these components by using modern training techniques due to the

negative impact this correlation and negative attitudes can have on the therapeutic work with persons with disabilities. The main objective of this study therefore was to investigate the nature of empathy and prejudice of senior psychology students towards persons with disabilities and to investigate the use of a serious game to enhance empathy and reduce prejudice towards persons with disabilities by focusing on four underlying aims.

The first research aim was to explore the nature of empathy amongst third year and Honours psychology students towards persons with disabilities. The results from the EQ and sub-scales of IRI depicted students as having average levels of empathy towards persons with disabilities. The findings indicated no significant effect from demographical factors such as ethnicity, race and age on their nature of empathy towards persons with disabilities. It is however noted that female participants scored higher on all the empathy measurements (EQ and three sub-scales of IRI). This conclusion resonances with findings in research indicating gender differences in empathy with female tending to be more empathic (Baron-Cohen & Wheelwright, 2004; Davis, 1980). Gender was also noted to influence participants' empathy sub-scales in research done by Collins, Gratton, Heneage and Dagnan (2015).

It is however concerning that psychology students only show average levels of empathy in their training of a profession that places high regard on empathic interpersonal relationships. Little is known about the empathy among psychology trainees, which is surprising given the importance of empathy in psychotherapy and therefore more research empathy amongst psychology students might help support the maintaining of empathy levels (Micheli, 2015). Further research on the nature of empathy found amongst psychology students might therefore be of value in the

understanding and facilitation of empathy in the training of psychologists as it might help to address the maintaining of empathy levels.

The second research question focused on nature of prejudice amongst third year and Honours psychology students towards persons with disabilities. According to Banse, Seise and Zerbes (2001) the IAT is a reliable, valid measurement of implicit attitudes, but reliability can be influenced by procedural variations. In order to prevent procedural variations influencing reliability, all groups were exposed to the same procedure in identical conditions throughout pre-test, post-test and the follow-up. Results from the first measurement of the IAT indicate a comparable level of strong prejudice amongst all three groups with means averaging around *d*-scores of about -0.85. The results echo the moderate to strong negative attitudes towards persons with a disability found across 13 international studies that employed the IAT (Wilson & Scior, 2014). The prejudice towards persons with disabilities can be due to the limited exposure the group, as full time students, has with persons with disabilities. Social psychology strongly support Allport's contact hypothesis, claiming that one crucial means of reducing intergroup prejudice is through contact between groups (Pettigrew & Tropp, 2000). This could possibly explain why the students with such low levels of exposure and experience in contact with persons with disabilities (Table 1) have high levels of prejudice towards persons with disabilities. This resonates with previous studies finding contact to account for significant differences in IAT scores (Wilson & Scior, 2014). This result has significant implications for the consideration of practical exposure to minority groups such as persons with disabilities to address levels of prejudice in the training of psychology students.

Thirdly, the study investigated whether “The World of Empa” could affect the psychology students’ empathy towards persons with disabilities. Only a small increase in the sub-scale of Fantasy in the immediate post-test of the experimental group was noted. The Fantasy scale measures the tendency to be caught up in fictional stories and to imagine oneself in the same situations as fictional characters, with the tendency to transpose oneself imaginatively into feelings and actions of the fictional characters (Davis, 1980). The increase in Fantasy after exposure to the serious game proves the important dynamics of games, play and imagination to enhance learning in such online contexts (Thomas & Brown, 2011). This also supports the effect of serious games challenging the imagination by creating a fantasy on extrinsic and intrinsic level to facilitate learning (Gunter, Kenny, & Vick, 2006). It would appear that the imaginative contact that people with disabilities had through exposure to the game might have had a small positive effect on the enhancement of the students’ empathy towards disabilities, even if only on the short term. Thus, possibilities to sustain this positive effect over time need to be investigated.

It seems as if the reading of literature findings and case studies of persons with disabilities also only had a short-term effect on the emotional component of empathy. The four subscales of the IRI measure both cognitive dimensions (Fantasy and Perspective Taking) and emotional dimensions (Empathic Concern and Personal Distress) of empathy as multidimensional components (Davis, 1980). It seems as if the text had a slight short-term decrease in the emotional dimension. This might indicate the factual text not appealing to the emotional dimension of the reader. None of these changes was however sustained over time. This temporary impact seems to support the notion that empathy as an embedded construct can be

influenced in some degree but that it cannot be completely forced (Davis, 1990).

Hatcher, Nadeau, Walsh and Reynolds (1994) presents research on the teachability of empathy using the IRI and they however suggest that a developmental sequence exists for the four sub-scales of the IRI and that future studies might need to sample larger populations in early adulthood, non-college and culturally diverse populations in order to gain clarity on this matter. Further research on the possibility empathy as a teachable construct is therefore needed on larger scale over a longer period to gain clarity of the effect of intervention strategies with the aim of enhancing empathy.

Finally, this study aimed to determine what effect of “The World of Empa” would have on the senior psychology students’ prejudice towards persons with disabilities. Once again, no significant changes were noted within the experimental group regarding prejudice towards persons with disabilities. Although Crips and Turner (2009) provide empirical research indicating that even imaginary intergroup interactions can support the contact hypothesis to reduce prejudice, it seems as if the aimed imaginary exposure in simulated contact through the serious game did not have any significant effect. This might be due to the lack of frequency as the contact hypothesis implies that increased contact with out-groups can lead to a decline in prejudiced attitudes (Beelmann & Heinemann, 2014). In the context of the current study, however, participants were just exposed to the simulated contact with persons with disabilities through the serious game on a single occasion, which might not have been enough to be significant. The possibility of increased frequency in simulated contact in order to reduce prejudice with a serious game might be considered in future studies.

Theoretical and Practical Implications

The results of the current study not only hold implications for future research considerations, but it also holds theoretical and practical repercussions. The average levels of empathy noted, and limited research on the nature of empathy among psychology students, indicate the need for future research in order to promote the theoretical understanding of empathy and its facilitation in practice. Small short-term effects seen in the results might support the notion that empathy is a dynamic component that is embedded in the personality of a person and therefore can only be facilitated in some degree. Theoretically, more research might be needed in order to determine the dynamics behind empathy in order to settle the debate in literature about empathy as a teachable construct or not. The slight short-term effects noted on reducing prejudice confirms the theory of contact hypothesis that increased contact with persons with disabilities might be needed to challenge negative attitudes and that once-off simulations cannot be enough to change the deep-rooted stereotypical societal beliefs towards persons with disabilities.

These findings also have practical implications for the training of psychology students as attention might be needed to address their exposure and frequency of contact with persons with disabilities during their training. Careful consideration should also be given throughout their training to establish necessary support systems in order to facilitate empathy as a dynamic component. This can be accomplished with possible use of awareness promotion in supervision, increased interaction with persons with disabilities in practical exposure, as well as experiential learning. The fact that empathy as an embedded construct can only be facilitated and not taught also holds practical implications for selection processes and consideration of personality factors in the selection of future psychologists.

Limitations and Future Recommendations

During the process of this study, certain challenges were faced contributing to limitations of the study. Due to the voluntary nature of the research, numerous participants did not return for the follow-up post-test and therefore creating incomplete data sets and only 83 of the participants' data being used. The initial intention was to have a bigger sample, but due to limited interest and participants withdrawing, it was not possible. This places severe limitations on statistical justifications and therefore no general conclusions can be drawn. It is recommended that a bigger scale study should be considered. The electronic data collection in big computer rooms also had technical difficulties, which might have created frustration and attention problems affecting the participants.

Almost half of the items that were excluded from the IRI in order to promote internal consistency were reverse score items, which might indicate possible problems in participants' interpretation of reverse score items. Although the IRI is regarded as one of the best measures of empathy developed, the IRI may measure processes broader than empathy as seen in some items included in sub-scales of fantasy and personal distress (Baron-Cohen & Wheelwright, 2004). This might also have an impact on the reliability of the IRI's depiction of students' empathy levels.

The possibility of the game developed in the European context having an impact on the results within the South African context cannot be excluded. It would be interesting to see if there are any differences between the study of the Vrije Universiteit Amsterdam (that developed the game and started with the same study in the Netherlands) and results found within the South African context to investigate the possibility of cultural influences on empathy and prejudice. Therefore, a

comparative study between the current study and the results from the same study done in the Netherlands might be recommended. With the negative correlation between experience and empathy as described in literature, it can also be considered to investigate the possible interventions in enhancing empathy within an older population. The current study focused on third year and honours psychology students with limited work experience and exposure to the demands of practical care. Focusing future studies on an older population with more experience can be considered to determine if intervention might be more effective once empathy already started declining with the gaining of experience.

Conclusion

The aim was to investigate psychology students' nature of empathy and prejudice towards persons with disabilities, as well as the use of a serious game to influence empathy and prejudice towards persons with disabilities in order to consider the training possibilities of important principles such as empathy and acceptance in the work with persons with disabilities. The ability to enhance empathy and reduce prejudice towards persons with disabilities might have a positive contribution to bridge the equality promoted in legislations to the experienced day of day reality of persons with disabilities. Slight short-term effects with regard to the use of the serious game and informative text, in contrast with no changes in the control group receiving no attention, supports the possibility of empathy being facilitated. However, future research efforts is needed in the consideration of establishing possible long-term changes in society, and particularly regarding to the psychotherapeutic work with persons with disabilities within the South African context.

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Tables

Table 1

Overview of Frequency Distribution of Participants' Demographic Information (N = 83)

| Variable | Description | Frequency | Percentage |
|--|-------------------|-----------|------------|
| Gender | Male | 18 | 22 |
| | Female | 65 | 78 |
| Age | 18-21 | 41 | 49 |
| | 22-25 | 32 | 39 |
| | 26+ | 10 | 12 |
| Ethnicity | Caucasian | 50 | 60 |
| | African | 26 | 31 |
| | Coloured | 7 | 9 |
| | Other | 0 | 0 |
| Experience working with persons with disabilities | none | 70 | 84 |
| | 1-2 years | 8 | 10 |
| | 3-5 years | 2 | 2 |
| | 5+ years | 3 | 4 |
| Participants having a disability himself/herself | no | 80 | 96 |
| | yes | 3 | 4 |
| Participants that have family member(s) with a disability | none | 51 | 62 |
| | Immediate | 6 | 7 |
| | Extended | 26 | 31 |
| Participants that know people other than family that have a disability | none | 46 | 55 |
| | neighbour | 12 | 15 |
| | fellow student | 21 | 25 |
| | other | 4 | 5 |
| Amount of contact with person with disability (n=37) | N/A | 1 | 3 |
| | 1-2 times a year | 6 | 16 |
| | 1-2 times a month | 10 | 27 |
| | 1-2 times a week | 10 | 27 |
| | daily basis | 10 | 27 |

Table 2

Reliability of Scales and Sub-scales as well as Descriptive Statistics Measured Before any Intervention

| Scales and sub-scales | Cronbach Alpha | Mean | Std. Deviation |
|-----------------------|----------------|---------|----------------|
| EQ | 0.82 | 46.5727 | 10.40 |
| IAT | N/A | -.84110 | 0.35 |
| Fantasy | 0.58 | 3.0212 | 0.54 |
| Perspective | 0.59 | 3.7909 | 0.63 |
| Empathic concern | 0.60 | 3.8455 | 0.70 |
| Personal distress | 0.53 | 3.2318 | 0.76 |

Table 3

Results from T-test for Gender Comparisons on Scores Obtained before Intervention

| Scales and sub-scales | Gender | n | Mean | Std. Deviation | p- value | Effect size (d-score) |
|-----------------------|--------|----|-------|----------------|----------|-----------------------|
| EQ | male | 16 | 39.88 | 8.71 | 0.01 | 1.03 |
| | female | 67 | 49.25 | 9.10 | | |
| IAT | male | 16 | -0.95 | 0.31 | .18 | 0.34 |
| | female | 63 | -0.82 | 0.37 | | |
| Fantasy | male | 16 | 2.89 | 0.52 | .18 | 0.37 |
| | female | 67 | 3.09 | 0.55 | | |
| Perspective | male | 16 | 3.53 | 0.66 | .06 | 0.54 |
| | female | 67 | 3.88 | 0.60 | | |
| Empathic concern | male | 16 | 3.39 | 0.82 | .01 | 0.78 |
| | female | 67 | 4.03 | 0.58 | | |
| Personal distress | male | 16 | 2.95 | 0.47 | .19 | 0.50 |
| | female | 67 | 3.31 | 0.72 | | |

Table 4

Results of HLM with Means between Groups and Effect Size Indicating Practical Significance

| Scales and Sub-scales | E Means | | | CL means | | | C means | | | MSE | Variance | p-values | | |
|--------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|----------|----------|-------|------|
| | Time ¹ | Time ² | Time ³ | Time ¹ | Time ² | Time ³ | Time ¹ | Time ² | Time ³ | | | Subject | Group | time |
| EQ | 46.00 | 44.18 | 44.97 | 49.02 | 50.12 | 49.05 | 47.23 | 45.66 | 48.26 | 17.2 | 91.4 | 0.33 | 0.78 | 0.55 |
| Fantasy | 2.96 | 3.17 | 2.91 | 3.31 | 3.22 | 3.09 | 2.93 | 3.08 | 3.10 | 0.17 | 0.11 | 0.31 | 0.53 | 0.16 |
| Perspective | 3.62 | 3.57 | 3.66 | 4.14 | 4.19 | 3.84 | 3.74 | 3.80 | 3.87 | 0.12 | 0.28 | 0.04 | 0.68 | 0.02 |
| Empathic concern | 3.58 | 3.57 | 3.73 | 4.38 | 4.11 | 4.01 | 3.79 | 3.71 | 3.89 | 0.14 | 0.23 | 0.01 | 0.46 | 0.01 |
| Personal distress | 2.98 | 2.99 | 3.12 | 3.72 | 3.85 | 3.35 | 3.08 | 3.25 | 3.27 | 0.19 | 0.22 | 0.00 | 0.63 | 0.11 |
| IAT | -0.86 | -0.81 | -0.76 | -0.87 | -0.46 | -0.75 | -0.84 | -0.65 | -0.75 | 0.08 | 0.05 | 0.46 | 0.01 | 0.43 |

MSE = Mean square error; E= Experimental group; CL = Control group (reading); C = Control group (no intervention)

Table 5

Effect Size over time for Means between Groups in Table 4

| Variable | Time | E | | CL | | C | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | Time ¹ | Time ² | Time ¹ | Time ² | Time ¹ | Time ² |
| EQ | Time ² | 0.18 | | 0.11 | | 0.15 | |
| | Time ³ | 0.10 | 0.08 | 0.00 | 0.10 | 0.10 | 0.25 |
| Fantasy | Time ² | 0.40 | | 0.19 | | 0.29 | |
| | Time ³ | 0.09 | 0.49 | 0.43 | 0.25 | 0.32 | 0.03 |
| Perspective | Time ² | 0.07 | | 0.09 | | 0.10 | |
| | Time ³ | 0.07 | 0.14 | 0.48 | 0.57 | 0.21 | 0.11 |
| Empathic concern | Time ² | 0.01 | | 0.44 | | 0.13 | |
| | Time ³ | 0.25 | 0.26 | 0.61 | 0.17 | 0.16 | 0.29 |
| Personal distress | Time ² | 0.01 | | 0.19 | | 0.25 | |
| | Time ³ | 0.21 | 0.20 | 0.59 | 0.77 | 0.30 | 0.04 |
| IAT | Time ² | 0.15 | | 1.12 | | 0.51 | |
| | Time ³ | 0.27 | 0.12 | 0.33 | 0.78 | 0.24 | 0.27 |

Section 3: CRITICAL REFLECTION AND REFERENCES

3.1. Critical reflection

The manuscript investigated the nature of psychology students' empathy and prejudice towards persons with disabilities and the use of a serious game in enhancing empathy and reducing prejudice towards persons with disabilities by exposing South African third year and Honours students in psychology to "The World of Empa". Empathy and Acceptance are crucial values in working therapeutically with persons with disabilities (Johnson, 2011). Although much has been done in legislation and administration to promote and protect the rights of persons with disabilities in South Africa, they still remain a marginalised group experiencing certain challenges due to their limitations and prejudices found within society (Heap, Lorenzo, & Thomas, 2009; Wiggett-Barnard, 2013). Therefore, the main aim of the study was to determine the nature of empathy and prejudice and to determine if a serious game could be used to influence empathy and prejudice. There were four underlying aims guiding the study.

The first aim was to explore third year and Honours psychology students' nature of empathy towards persons with disabilities. The findings depicted students having average levels of empathy with no significant effect from demographical factors such as race and age on their nature of empathy. However, the results indicate female participants scoring higher on all the empathy measurements. This outcome echoes research findings indicating gender differences in empathy with female superiority (Baron-Cohen & Wheelwright, 2004; Davis, 1980).

The second aim was to explore the nature of prejudice among third year and Honours psychology students towards persons with disabilities. The findings

indicated a comparable level of strong prejudice amongst all three groups. The level of prejudice within the whole group can be due to the limited experience with persons with disabilities. These findings resonates with Allport's contact hypothesis stating that the contact between members of different groups leads to a decline in prejudiced attitudes and generally promotes positive intergroup relations (Beelmann & Heinemann, 2014). This could possibly explain why the students with such low levels of exposure and experience in contact with persons with disabilities have high levels of prejudice towards persons with disabilities.

The third aim focused on the effect of the serious game "The world of Empa" on the student's empathy towards persons with disabilities. The findings indicate no significant long-term changes in empathy, but suggest a slight increase in students' tendency to imagine themselves in the situation of perceived characters. The improvement on the fantasy sub-scale supports the effect of serious games in challenging the imagination by creating a fantasy on extrinsic and intrinsic level to facilitate learning (Gunter, Kenny, & Vick, 2006). However, possibilities in how to sustain this positive effect over time needs to be considered.

The fourth aim focused on the effect of "The World of Empa" on the students' prejudice towards persons with disabilities. Once again, no major changes were seen in the prejudice towards persons with disabilities. Although Crips and Turner (2009) argues that imaginary intergroup interactions can support the contact hypothesis to reduce prejudice, it seems as if the aimed imaginary exposure in simulated contact through this serious game did not have any noteworthy effect. This might be due to the lack of regularity as the contact hypothesis implies that increased contact with out-groups can lead to a decline in prejudiced attitudes (Beelmann & Heinemann, 2014). The current study only exposed participant to the

simulated contact with persons with disabilities through the serious game on a single occasion, which might not have been enough to be significant. The possibility of increased frequency in simulated contact in order to reduce prejudice with a serious game might be considered in future studies.

The possibility of reducing prejudice and enhancing empathy as seen in the slight short-term changes among the participants can have theoretical and practical implications for the training of psychology students in working with persons with disabilities. Theoretically, it contributes to the understanding of empathy as a dynamic component that can be facilitated. Incorporating such a theoretical foundation influences the development of training programs, because attention should be given to the structuring and availability of support to facilitate empathy. Practical exposure in the training of students should also be considered, as it seems to play an important role in the influencing of prejudice. However, further research on the topic concerning the frequency of intervention and possibility of cultural influences in results is necessary to address the implicated theoretical and practical implications.

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Addendums

Informed consent form