The relationship between self-regulation, risky sexual behaviour and dating application use in young heterosexual adults

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Mini-dissertation submitted in partial fulfilment of the requirements for the degree Master of Arts in Counselling Psychology at the North-West University

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Examination:	March 2019
Student number:	29078288

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LIST OF ABBREVIATIONS

APA	American Psychological Association
COPE	Committee on Publication Ethics
GPS	Global Positioning System
GSN	Geosocial networking
HIV	Human immunodeficiency virus
HREC	Health Research Ethics Committee
MSA	Measure of sampling adequacy
MSM	Men who have sex with men
NWU	North-West University
RSB	Risky sexual behaviour
SAJP	South African Journal of Psychology
SNS	Social networking site
SRS	Sexual Risk Survey
SSRQ	Shortened Self-Regulation Questionnaire
STI	Sexually transmitted infection
US	United States

ACKNOWLEDGEMENTS

I would like to acknowledge the following people:

- Prof. Karel Botha – thank you for choosing me to be your student. I have learned so much from you over the past few years. I appreciate your endless encouragement and belief in my abilities. It is thanks to you and your commitment to this study that we were able to produce something to be truly proud of.
- Mrs Wilma Breytenbach – thank you for assisting me with the statistical analysis and interpretation of the results. I appreciate your patience and calmness throughout the process and I am so thankful for all your help.
- My wonderful parents – thank you so much for being there for me as much when I felt in control as you were when I felt like I was drowning. Thank you for allowing me the opportunity to pursue my dreams and being my biggest supporters throughout this journey.
- Fish – thank you for being the best brother I could ever have asked for. Your words of encouragement gave me so much energy! Thank you for sharing my research link with all your friends and double-checking the references for me.
- Prof. Johan Botha – thank you for being a mentor and guide to me throughout my master's, but also for the years before that. Your mentorship has given me incredible opportunities and I am forever grateful to you for that.
- Prof. Stephen Walker – thank you for assisting me in making sense of the statistics and your encouragement to push on when the process was difficult. You helped me stay rational in times of irrationality.
- My dearest friends, near and far – you have warmed my heart wherever you are! I am blessed to have too many friends to mention, but every message, word, and smile kept me going and I am so thankful to you all!
- Psyche family – thank you for always being there for me. You guys made me who I am and I am so thankful for all your love and support! You are my happiness.
- NWU Psych master's class of 2017 – thank you for walking this journey with me. I am blessed to have met you all.
- UNIBS interns – without our self-care days, this would not have been possible!
- Thank you to everyone who shared and/or took part in this research study. I could not have done it without you.

SUMMARY

Dating applications can be defined as social networking sites (SNSs) that target convenience, closeness in physical location, and physical attraction. In the past few years, dating applications have become increasingly popular among young adults aged 18 to 24 years. This increase in dating application use is of particular relevance given the fact that this age group is particularly vulnerable to engaging in, and experiencing the consequences of, risky sexual behaviour (RSB). In South Africa particularly, RSB among young adults is associated with increased rates of the human immunodeficiency virus (HIV), other sexually transmitted infections (STIs), and unplanned pregnancies. Some research has suggested that self-regulation, defined by Karoly (1993) as the conscious or unconscious regulation of emotions, thoughts, motivations, cognitions, social interactions, and physical behaviours in relation to changing environments, may be a possible intervention point to mitigate RSB. The aim of this study was therefore to investigate the relationships between self-regulation, dating application use, and RSB, with the ultimate intention of identifying future points of intervention to mitigate RSB within the South African young adult population.

A convenience sample of 151 heterosexual South African young adults between the ages of 18 and 24 years (female=105 [69.5%], male = 46 [30.5%]) participated in the study. The participants completed an online questionnaire using Google Forms, which they accessed through a link posted on the Facebook group, "South African Youth Business Unity". Self-regulation was measured with Carey, Neal, and Collins' (2004) Shortened Self-Regulation Questionnaire (SSRQ). In this study, the factor structure proposed by Potgieter and Botha (2009), based on a factor analysis of the SSRQ in the South African context, was used. RSB was measured with an adapted version of Turchik and Garske's (2009) Sexual Risk Survey (SRS). Some questions related to dating application use were also asked in the online questionnaire. Statistical analysis of the data was then conducted using Pearson's correlations, effect sizes, and multiple regressions.

The two gender groups showed considerable differences regarding RSB and differed slightly regarding self-regulation. Male participants showed larger practically relevant effect sizes on several RSB factors (Uncommitted Partners, Intent to Engage, Impulsive Behaviour, and Total RSB) when compared with female participants, who only showed practical importance related to Uncommitted Partners and Intent to Engage. Male participants thus appear to be more vulnerable to RSB than female participants. Regarding self-regulation differences, males who have used dating applications showed considerably poorer scores on Persistence than those who have not used dating applications. Female participants showed no noteworthy differences related to any self-regulation factors when comparing participants who have or have not used dating applications. Another significant gender difference in self-regulation indicated that Decision-Making can be used to predict, and therefore intervene in, RSB among male participants, particularly those who have used dating applications. Therefore, it is recommended that intervention programmes aimed at reducing RSB strive to improve decision-making and persistence skills.

It was concluded that important relationships between self-regulation, dating application use, and RSB exist among young South African adults. Gender differences identified within this study indicate that young males who use dating applications show stronger relations to RSB than females or males who do not use dating applications. The identification of persistence and decision-making skills as possible intervention points to mitigate RSB is of great relevance and substantial contribution within the current climate of young South Africans.

Keywords: self-regulation, dating application, risky sexual behaviour, South African young adults, 18 to 24 years

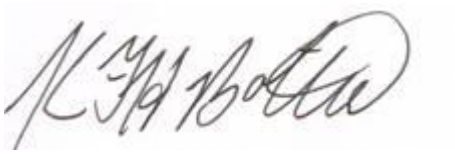
PREFACE

- This mini-dissertation forms part of the requirements for the completion of the degree Master of Arts in Counselling Psychology at the Potchefstroom Campus of the North-West University (NWU). It has been prepared in article format (manuscript to be submitted for publication) with three chapters and complies with the requirements identified by the NWU in Rule A.4.4.2.9.
- Chapter 1 includes an in-depth literature review that aims to present the reader with background information and the defining concepts that are relevant to this study. Chapter 2 presents the manuscript that will be submitted to the *South African Journal of Psychology* (SAJP) for possible publication. The manuscript itself will include a short introduction, the aims of the study, and the methodology followed, as well as the findings of the study and a discussion and conclusion on these. Finally, Chapter 3 presents a critical reflection by the researcher on the research process.
- The manuscript in Chapter 2 has been compiled in accordance with the requirements set out by the *SAJP*, with the goal of possibly submitting it for publication. The tables reflecting results have been placed in the manuscript at the relevant result discussion points in order to enhance reader convenience for the examiners. However, when the manuscript is submitted to the aforementioned journal, the tables will be placed in the addendum.
- The manuscript and the reference list were styled according to the specifications of the American Psychological Association (APA) 6th edition publication guidelines for the purpose of examination. Where journal specifications differ from the APA publication guidelines, the appropriate amendments will be made before submission for publication.
- For the purpose of examination, the pages will be numbered chronologically from the Table of Contents page, ending with the Addendum.
- A language practitioner conducted the language editing of this mini-dissertation.
- Data collection for the study (online questionnaire) was conducted in English.
- Consent for the submission of this mini-dissertation for examination purposes (in fulfilment of the requirements for the Master of Arts Degree in Counselling Psychology) was provided by the research supervisor, Prof. Karel Botha.
- Lastly, this mini-dissertation was submitted to Turnitin, which established that its content fell within the norms of acceptability regarding plagiarism.

CONSENT TO SUBMIT

Letter of consent

I, the supervisor of this study, hereby declare that the article, titled *"The relationship between self-regulation, risky sexual behaviour and dating application use in young heterosexual adults"*, written by Nicole Docherty, does reflect the research regarding the subject matter. I hereby grant permission that she may submit the mini-dissertation for examination purposes and I confirm that the mini-dissertation submitted is in fulfilment of the requirements for the degree Master of Arts in Counselling Psychology at the Potchefstroom Campus of the North-West University. The article may also be sent to the *South African Journal of Psychology* for publication purposes.



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Prof. K.F.H. Botha

Supervisor

DECLARATION BY RESEARCHER

Declaration by researcher

I, Nicole Docherty, hereby declare that this mini-dissertation, titled *"The relationship between self-regulation, risky sexual behaviour and dating application use in young heterosexual adults"*, is my own effort and has never been submitted for examination before. I further declare that the sources utilised in this dissertation have been referenced and acknowledged. Furthermore, I declare that this mini-dissertation was edited and proofread by a qualified language editor, as prescribed. I lastly declare that this research study was submitted to the Turnitin software system and a satisfactory report was received with regard to plagiarism.

Nicole Docherty

Student number: 29078288

GUIDELINES FOR AUTHORS

Description

The article (see Chapter 2) will be submitted for possible publication in the *South African Journal of Psychology (SAJP)*. The *SAJP* is owned by SAGE Publications, which publishes a variety of Southern African and African journal titles. The journal publishes contributions from all fields of psychology in English. Empirical research is emphasised; however, the journal accepts theoretical and methodological papers, review articles, short communications, book reviews, and letters commenting on articles published in the journal. Articles relevant to Africa which address psychological issues of social change and development are prioritised.

Instructions for authors

General

In general, the manuscript must be written in a high grammatical standard in English. It must follow the specific technical guidelines that are stipulated in the submission guidelines. The American Psychological Association (APA) 6th edition is followed in the preparation of the manuscript. The research within the manuscript should comply with the accepted standards of ethical practice, presented by the Committee on Publication Ethics (COPE). The journal endeavours to publish accurate, transparent, and ethically sound research.

Manuscript style

The *SAJP* follows the SAGE house style guidelines stipulated in the SAGE UK house style guidelines. The following format is required for research-based manuscripts:

- The introductory/literature review section requires no heading.
- The following headings/subheadings are necessary:
    - Method: Participants; Instruments; Procedure; Ethical considerations; Data analysis (which includes the statistical techniques or computerised analytic programmes, if applicable); Results; Discussion; Conclusion; References.
- Within the “Ethical considerations” section, the name of the institution that granted ethical approval of the study must be stipulated.

Format

Only electronic files that adhere to the stipulated guidelines are accepted. The format of the manuscript may either be Microsoft Word or LaTex files. All manuscripts must be double-spaced throughout and with a minimum of 3 cm for left and right-hand margins, as well as 5 cm at the head and foot. The text should be a standard 12 points.

Keywords and abstracts

An abstract of no more than 250 words should be included and should aid readers in finding the article online. Up to six alphabetised keywords should be included in the abstract and always highlighted. Key descriptive phrases should be repeated and focused on in the abstract. Thus, the abstract must be written in such a way that it conveys the necessary information/data which assists search engines in finding the article and ranking it on the search results page.

Artwork, figures, and other graphics

Illustrations, pictures, and graphs should be provided in the highest quality and in electronic format. Further guidelines include:

- Format: TIFF, JPEG: Common format for pictures (containing no text or graphs).
- EPS is the preferred format for graphs and line art as it retains quality when enlarging/zooming in.
- Placement: Figures/charts and tables created in Microsoft Word should be included in the main text rather than at the end of the document.
- Figures and other files created outside Microsoft Word (i.e. Excel, PowerPoint, JPEG, TIFF, EPS, and PDF) should be submitted separately.
- Resolution: Rasterised based files (i.e. with .tiff or .jpeg extension) require a resolution of at least 300 dpi (dots per inch). Line art should be supplied with a minimum resolution of 800 dpi.
- Colour: Images supplied in colour will be published in colour online and black and white in print.
- Dimension: The artworks supplied must not exceed the dimensions of the journal. Images cannot be scaled up after origination.
- Fonts: The lettering used in the artwork should not vary too much in size and type (usually sans serif font as a default).

Reference style

The journal adheres to the APA referencing style. Specific guidelines are provided, and it is the author's responsibility to produce an accurate reference list. The references are listed alphabetically at the end of the article, while in-text references are referred to by name and year in parentheses. The references are structured as follows:

- Last name and initials of all authors
- The year the reference item was published (in brackets)

- The title of the article
- The name of the publication
- The volume number
- An issue number (if provided)
- The inclusive pages
- Digital object identifier (DOI)

The Publication Manual of the APA 6th edition can be consulted for accurate formatting of reference. The style and punctuation of the references should conform to the APA style. Illustrated below are examples of different styles:

• Journal article

Gower, M. (2013). Revenge: Interplay of creative and destructive forces. *Clinical Social Work Journal*, *41*(1), 112-118. https://doi.org/10.1007/s10615-012-0407-0

• Book

Calfee, R. C., & Valencia, R. R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.

English language editing services

The language used in the manuscript has to be accurate and of adequate quality to be understood by the editors and reviewers during the assessment of the manuscript. The author should consider having a colleague (whose home language is English) review the manuscript for clarity. Submit the manuscript for professional editing. Consider utilising the SAGE Language Service, which can format the manuscript to the specifications of the journal.

CHAPTER 1:
LITERATURE REVIEW

INTRODUCTION

In this chapter, literature relevant to the study will be discussed, explained, and elaborated upon. The literature review will begin by examining the various constructs and relevance of self-regulation within the study. The literature will focus on social networking sites (SNSs) as a broad introduction to dating applications. Following the discussion on dating applications, risky sexual behaviour (RSB) will be analysed within the global and local context. This section will be followed by a brief discussion of young adulthood as a developmental stage. The literature will then be integrated, summarised, and interrelated.

SELF-REGULATION

Research related to the behavioural components of self-regulation spans almost four decades. The conceptualisation of self-regulation has evolved over time, from initially more rigid and simplistic stimulus-response conceptualisations (Kanfer, 1970) through to more dynamic, cybernetic control theories (Carver & Scheier, 1982), and finally to the current conceptualisations where it is considered a pivotal component of explaining social cognition (Bandura, 2001), psychopathology, and positive psychology (Vohs & Baumeister, 2016).

Self-regulation can be defined as the conscious or unconscious regulation of emotions, thoughts, motivations, cognitions, social interactions, and physical behaviours in relation to changing environments (Karoly, 1993). It is the mindful capacity to adapt one's behaviour in accordance with dynamic circumstances or the proactive process of organising one's cognitions and behaviours in an attempt to reach some goal (Błachnio & Przepiorka, 2015; Diaz & Fruhauf, 1991). From these definitions, it becomes clear that self-regulation is a necessary component of adaptive and socially acceptable behaviours.

Several theories of the constructional components of self-regulation exist. One view of self-regulation as a construct indicates that it comprises three main components: (1) the thoughts, feelings, or behaviours that one chooses to express; (2) the level of motivation one invests in obtaining these thoughts, feelings, and behaviours; and (3) the level of capability that one possesses to achieve these thoughts, feelings, and behaviours in the face of distractions and temptations (Hofmann, Friese, Schmeichel, & Baddeley, 2011). Self-regulation is thus instrumental in coordinating individual behaviour.

Karoly (1993) indicates that there are at least five interrelated components or phases of self-regulation that enable an individual to initiate and complete goal-directed behaviour. These components are (1) goal selection, (2) goal cognition, (3) directional maintenance, (4) directional change, and (5) goal termination. In this model, goal selection is the ability of the individual to select a general direction of intended behaviour, with the knowledge and recognition that simply selecting a direction is insufficient to reach the objective. In order for the outcome to be met, the individual must retrieve certain schemas or mental models

related to goal-driven behaviour. This is referred to as goal cognitions, which provide a script for the individual to follow. The individual then engages in a feedback loop in order to determine whether they should continue to engage in a behaviour or change the behaviour with the intention of ultimately reaching, and terminating, the goal. Self-monitoring is thus an essential component of self-regulation as it facilitates directional maintenance or change.

Moller, Deci, and Ryan (2006) emphasise a qualitative distinction between two types of self-regulation: (1) autonomous self-regulation and (2) controlled self-regulation. Autonomous self-regulation is characterised by the person feeling as though the specific behaviour, emotion, or cognition is being regulated as a choice that the individual endorses and is willing to engage in freely of their own volition (Moller et al., 2006). Controlled self-regulation, in contrast, is characterised by feelings of intrinsic or extrinsic pressures, which coerce the individual into the regulation of the behaviour, emotion, or cognition (Moller et al., 2006). Controlled self-regulation is thus more difficult to maintain and depletes the self-regulatory resources of the individual more easily than autonomous self-regulation (Moller et al., 2006). This study indicates that it is not only self-regulation that is important, but particularly autonomous self-regulation in which the individual acts in a regulated manner out of personal preference, as opposed to intrinsic or extrinsic pressures.

In instances of poor self-regulation, individuals may be at risk of developing psychological disturbances or disorders over time; for example, alcohol abuse (Carey et al., 2004), impulsive- and compulsive-related disorders (Shalev & Sulkowksi, 2009), as well as emotional problems, eating disorders, destructive behaviours such as crime, violence, and gambling (Quinn & Fromme, 2010; Baumeister & Vohs, 2004), and RSB (Moilanen, 2014). Kuhl, Kazén, and Koole (2006) perceive self-regulation as an intrapersonal process with a strong capability to adapt. In addition, Sokol and Müller (2007) emphasise the fact that self-regulation is vital for autonomous and adaptive psychological functioning. Research indicates that effective self-regulation can protect against the detrimental effects of stress, by enabling one to take suitable action to counter the effects of stress (Baumann, Kaschel, & Kuhl, 2005). Self-regulation allows individuals to make decisions that focus on long-term gains, rather than on short-term benefits (Sokol & Müller, 2007). It is therefore evident that self-regulation is essential for adaptive behaviour and that failure in self-regulation is associated with many major social and personal problems.

One life domain that increasingly challenges self-regulation is that of SNSs and the use of dating applications, specifically with regard to RSB.

SOCIAL NETWORKING SITES (SNSs)

The use of social media has become integrated into the daily lives and basic functioning of people worldwide (Champion & Pedersen, 2015; Cookingham & Ryan, 2015; Groth, Longo, & Martin, 2017). A particularly relevant and expanding area of social media is referred to as SNSs (Lin, Fan, & Chau, 2014). According to Boyd and Ellison (2007, p. 211) SNSs can be defined as

> "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system".

SNSs enable individuals to engage and interact with other users on various platforms by allowing users to create profiles, which may or may not accurately represent the individual (Cookingham & Ryan, 2015; Wanjohi, Mwebi, & Nyang'ara, 2015). SNSs thus create social norms or trends by influencing the way in which people communicate, interact, and form and maintain relationships, as well as serving the function of individual entertainment, self-promotion, and various forms of marketing (Błachnio & Przepiorka, 2015; Lin et al., 2014).

Studies show that 90% of United States (US) college students (Champion & Pedersen, 2015; Groth et al., 2017) and 80% of adolescents aged 12 to 17 (Cookingham & Ryan, 2015) use social media. Young adults frequently engage and interact through various SNSs for various reasons, including socialising, entertainment, general information, and increasing self-knowledge (Park, Kee, & Valenzuela, 2009). Gender differences for SNS use is seen in that females are more likely to use SNSs for relational aspects, while males use SNSs more for entertainment and information (Barker, 2009). Social media is seen as an important aspect in modern youth development (Oksman & Turtiainen, 2004). Various positive consequences can therefore arise from positive SNS experiences, such as enhancing existing relationships with peers, forming new relationships, overcoming shyness, formation of personal and social identity, provision of a relational platform for those who do not fare well in face-to-face engagements, improved collective self-esteem, as well as higher social capital (Ellison, Steinfield, & Lampe, 2007) and improved psychological wellbeing (Barker, 2009).

SNSs have an influence on youth behaviour by creating social norms or trends and influencing communication and relationship formation. Some behaviours that stem from SNS use may be maladaptive; for example, cyberbullying, Internet addiction, or RSB such as sexting or sexual grooming and unsafe disclosure of information (Valenzuela, Park, & Kee, 2009). Other negative consequences of SNSs include a decline in academic performance (Wanjohi et al., 2015), as well as a negative impact on self-esteem (Barker, 2009; Valkenburg, Peter, & Schouten, 2006; Wanjohi et al., 2015) and wellbeing (Valkenburg et al., 2006), particularly when young people receive negative feedback on their various SNSs.

With SNSs having various negative consequences for young people, addiction to SNSs may have an even more pronounced effect, as the young person has increased SNS and Internet exposure. While no formal,

standardised diagnostic criteria or definition of Internet addiction exists, it is widely accepted that Internet addiction may be characterised as the use of the Internet in a manner that harms the individual's physical, psychological, social, academic, occupational, or other level of functioning (Pinna et al., 2015; Yau, Potenza, & White, 2013). Several researchers have characterised Internet addiction as similar to other behavioural addictions like substance dependence (Shaffer, 1996; Yau et al., 2013) due to the overlapping symptomology, including reduced self-regulation of experience, tolerance, withdrawal, and cravings to repeat the behaviour (Yau et al., 2013). Shaffer (1996) defines behavioural addiction as a disorder where there is (1) behaviour that functions to produce pleasure and to relieve feelings of pain and stress, and (2) failure to control or limit the behaviour despite significant harmful consequences. These characterisations suggest that Internet use may represent short-term rewards that stimulate repeated and persistent behaviours (Yau et al., 2013). Block (2008) proposes the following diagnostic criteria for Internet addiction: (1) excessive Internet use to the extent that time and basic drives are neglected, (2) withdrawal symptoms (emotional and/or physical) when the Internet is not accessible, (3) tolerance, including the need for better computer equipment, more software, or more hours of use, and (4) adverse consequences at any level of daily functioning. Further research indicates that there are five different types of Internet addiction that can be considered: (1) computer addiction, (2) information overload, (3) Internet compulsions such as online gaming, gambling, or shopping, (4) cyber-sexual addiction and (5) cyber-relationship addiction (Young, Pistner, O'Mara, & Buchanan, 1999; Kuss & Griffiths, 2011). SNS addiction specifically appears to fall in the last category since the purpose and main motivation for youths to use SNSs is to establish and maintain relationships (Kuss & Griffiths, 2011). Not only can SNS addiction thus be seen as an impulse-control disorder (Van Deursen, Bolle, Hegner, & Kommers, 2017) but also, by implication, as the result of poor self-regulation related to the frequency of Internet use (Pinna et al., 2015).

DATING APPLICATIONS

Recently, match-making or dating applications have increasingly tapped into the SNS market. In the past, online dating referred specifically to dating websites; however, in recent years, mobile dating applications have emerged and have become exceptionally popular. Between 2014 and 2016, online dating application use by individuals aged 18 to 24 increased from 10% to 27% (Smith, 2017). In particular Grindr, a dating application for men who have sex with men (MSM) and Tinder, a dating application that targets all sexual orientations, have seen large increases in use (Sawyer, Smith, & Benotsch, 2017). While online dating websites focus on critical analyses of who to match with whom based on complex algorithms, mobile dating applications can be defined as SNSs that target (1) convenience, (2) closeness in physical location, and (3) physical attraction. Closeness in physical location is targeted through geosocial networking (GSN) apps, which specifically use Global Positioning System (GPS) tracking to locate other users for interaction based on proximity (Beymer et al., 2014; Sawyer et al., 2017). Mobile dating applications are generally more impulse based (Carpenter & McEwan, 2016; March, Grieve, Marrington, & Jonason, 2017; Timmermans & De Caluwé, 2017), and may increase user convenience by making it easier to meet with other individuals (Sutter, 2010). In addition to GPS tracking, the ability to download dating applications for free, as well as

the ability to carry the dating application with the individual (on their mobile device), further increase user convenience (Choi, Wong, & Fong, 2017). This has likely contributed to the stark shift from online dating sites to dating applications.

Tinder, for example, is a match-making application that is becoming increasingly popular with young adults and boasts 10 million active users per day and 100 million downloads since its release (Smith, 2017). Tinder allows users to select the age range, sex, and GPS-linked distance range of their potential "matches" (Sawyer et al., 2017). The profile information attached to a Tinder profile is fairly limited and includes only a name, age, and short space for a biography or "bio" (Choi et al., 2017; Sumter, Vandenbosch, & Ligtenberg, 2017). It is not uncommon for individuals to put their Tinder motivations in the short bio attached to their profile to inform possible suitors of their motives. The Tinder profile includes spaces for photographs of the user in order for an interested individual to decide whether he/she would like to engage with the user in the profile or not (Choi et al., 2017). All Tinder profiles are linked to a Facebook account or registered phone number in an attempt to decrease the likelihood of fake profiles (Sumter et al., 2017). The user then swipes right to "match" a profile he/she likes or left to decline the profile. If both the individuals swipe right, a chat window opens up and the individuals can begin interacting (Choi et al., 2017; Sumter et al., 2017).

Research shows that the main motivations for Tinder use are: (1) love, (2) casual sex, (3) ease of communication, (4) self-worth validation, (5) thrill of excitement, and (6) trendiness (Sumter et al., 2017). In a study that focused on the big five personality traits, Tinder users who are single have been found to be more extroverted and open to new experiences than single individuals who do not use Tinder (Timmermans & De Caluwé, 2017), while those who scored highly on agreeableness showed an increased likelihood of engaging in RSB (Timmermans & De Caluwé, 2017). Based on this, it is not surprising that SNSs have increasingly become a new context for the expression of sexual behaviour (Champion & Pedersen, 2015) and indeed RSB (Beymer et al., 2014; Bhattacharya, 2017; Champion & Pedersen, 2015; Choi et al., 2016; Choi et al., 2017; Sawyer et al. 2017; Sumter et al., 2017).

In particular, these individuals report higher rates of unprotected sexual activity, sexually transmitted infections (STIs), and higher numbers of sexual partners among dating application users (Choi et al., 2017; Sawyer et al., 2017).

RISKY SEXUAL BEHAVIOUR (RSB)

RSB is defined by Brawner, Alexander, Fannin, Baker, and Davis (2015, p. 144) as

> "[a]ny sexual behaviour that increases the probability of exposure to HIV, STIs or unwanted pregnancies, including but not limited to unprotected genital contact (oral, anal, or vaginal), with or without penetration, orgasm, or ejaculation; concurrent sexual partners or multiple sequential sexual partners; sexual activity under the influence of drugs and/or alcohol; sexual activity in exchange for emotional support or material goods (e.g., money, drugs)".

One factor that has consistently been associated with RSB and that may contribute to increasing rates of STIs among young heterosexual adults is impulsivity. The impulsiveness of mobile dating applications contributes to RSB (Carpenter & McEwan, 2016; Champion & Pedersen, 2015; Dir, Coskunpinar, & Cyders, 2014; Emond, Nolet, Cyr, Rouleau, & Gagnon, 2016; Groth et al., 2017; Hoque, 2011), which makes these applications more risky than either online dating sites or in-person encounters (Carpenter & McEwan, 2016). One study indicated that participants who made use of dating applications had higher levels of impulsivity than participants who did not make use of dating applications (Sawyer et al., 2017).

Impulsivity may be seen as a personality trait that results from poor self-regulation, and can be defined as the inability to inhibit one's behaviour, the tendency to act without regard of consequences (Hayaki, Anderson, & Stein, 2012), or "the predisposition toward rapid, unplanned reactions to internal or external stimuli without regards to the negative consequences of these reaction" (Wilson & Vassileva, 2016, page 2). According to Wilson and Vassileva (2016), two broad dimensions of impulsivity have been identified: (1) hot impulsivity – emotion-based tendency towards immediate gratification in the presence of anticipatory cues, and (2) cool impulsivity – emotionally-neutral tendency towards rapid, premature responses, regardless of context. Studies have indicated that impulsivity is strongly linked to sexual risk-taking (Charnigo et al., 2013; Derefinko et al., 2014; Hayaki et al., 2012; Wilson & Vassileva, 2016). In particular, impulsive decision making was related to the engagement of sexual acts while using drugs and/or alcohol, engaging in unprotected sexual acts, and sexual acts with multiple partners and/or with a stranger (Charnigo et al., 2013).

Research specifically shows that individuals who seek sexual partners through online dating sites engage in substantially more RSB, including higher rates of substance use during sexual activity, unprotected sexual activity, and have higher rates of STIs (Champion & Pedersen, 2015; Sumter et al., 2017; Bhattacharya, 2017). Within the South African context, where RSB is already a serious concern (Adams et al., 2013; Osuafor & Ayiga, 2016) and where the HIV/AIDS crisis continues to threaten the lives of millions of individuals (Brawner et al., 2015), the addition of GSN dating applications could have a significant effect on the frequency with which RSB occurs and the social normalcy attributed to this behaviour (Carpenter & McEwan, 2016). Dating applications may normalise casual sex and lead to increased cases of unprotected sex (Carpenter & McEwan, 2016), thus increasing the likelihood of HIV/AIDS, STIs, and unplanned pregnancies.

One study investigating RSB in MSM populations indicated that individuals who used GSN applications for meeting sexual partners had greater odds of developing gonorrhoea and chlamydia than individuals who met partners through in-person methods only (Beymer et al., 2014). A study by Brink (2017) indicated that homosexual individuals might engage in more RSB and are thus at greater risk than heterosexual populations due to higher levels of unprotected anal intercourse, higher partner turnover, higher levels of STIs and unknown HIV status, increased complacency about risk, more frequent use of the Internet to identify partners, as well as higher alcohol use before sex and drugs for recreational purposes (Brink, 2017).

As much of the research that has already been conducted regarding dating applications has focused on homosexual populations (Ko, Tseng, Huang, Chen, & Hsu, 2016; Queiroz et al., 2017; Tang et al., 2016), this research study focuses on heterosexual individuals.

Dating application research specific to heterosexual populations is extremely limited, and has also been conducted almost exclusively on Tinder. Previous research has focused on the motives of Tinder use (Sumter et al., 2017; Timmermans & De Caluwé, 2017), personality (Timmermans & De Caluwé, 2017), the characteristics of Tinder users (Carpenter & McEwan, 2016), as well as possible pathological uses of Tinder (Duguay, 2016; March et al., 2017), racism (Mason, 2016), and general Tinder statistics (Perez, 2017; Smith, 2017). While some of these studies mentioned incidents of RSB (Carpenter & McEwan, 2016; Choi et al., 2016; Choi et al., 2017; Sawyer et al., 2017; Shapiro et al., 2017; Sumter et al., 2017; Timmermans & De Caluwé, 2017), none of them focused on self-regulation per se.

YOUNG ADULTHOOD AS A DEVELOPMENTAL STAGE

It is apparent from the literature that young people are at a particular risk for engaging in and experiencing the consequences of RSB. This transitional developmental period of young adulthood is also sometimes referred to as "emerging adulthood" (Arnett, 2000) because young adults are often not independently able to engage in adult responsibilities. It is viewed as a transitional period between adolescence and adulthood (specifically age 18 to 25) and can be conceptualised in various ways, as indicated in Figure 1. However, as there is no current agreement or standard use of "emerging adulthood", in this study the term "young adult" will be used henceforth.

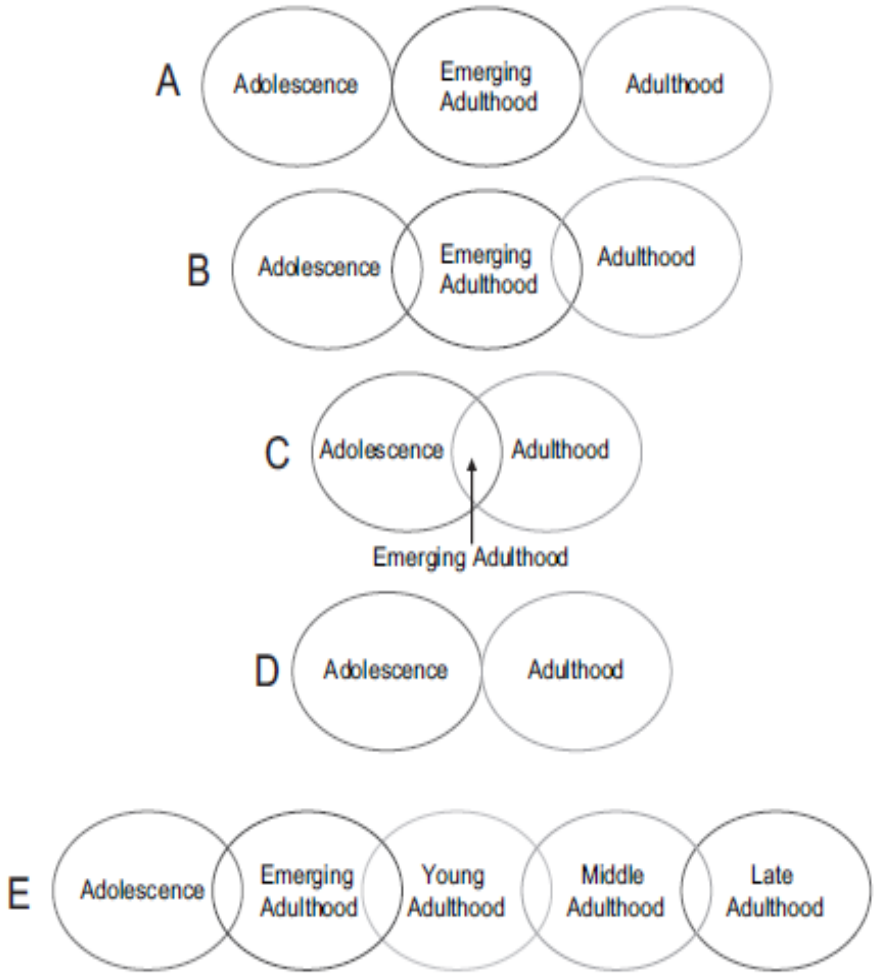

Figure 1: Conceptualisation of emerging adulthood

Source: Arnett (2007, page 69)

According to Arnett (2007), the traditional experiences of young adults related to education, volition, and romantic pursuits have changed over time. In particular, he states that sexual customs, such as premarital sex and cohabitation, are becoming more widely accepted as general practices and that the general ages of marriage and parenthood are later than they were in past generations. From the literature it is apparent that this transitional period is characterised by unstable relationships, movement between committed relationships, and spontaneous romantic engagements. A common phenomenon within this demographic is the engagement of "hooking up".

Hook-ups can be defined as "uncommitted and emotionally uninvolved sexual encounters" or "one-night stands" without the typical constraints of more traditional relationships (Garcia & Reiber, 2008; Paul, Wenzel, & Harvey, 2008). These engagements typically involve strangers, acquaintances, or friends. Behaviours associated with hook-ups include flirting, alcohol consumption, hanging out, and activities of physical intimacy, including kissing, touching, oral sex, vaginal sex, and anal sex (Lewis, Granato, Blayney, Lostutter, & Kilmer, 2012). It is reported that between 65% and 80% of undergraduate students of various

US colleges have engaged in at least one hook-up during their studies. In another study, 81% of undergraduate participants engaged in hook-up behaviour. These behaviours included 58% of participants having engaged in sexual touching of the breasts, 53% of participants engaging in sexual touching of genital areas, 36% performing oral sex, 35% receiving oral sex, and 34% engaging in vaginal penetrative intercourse within the context of a hook-up (Reiber & Garcia, 2010).

The negative consequences of hook-ups can be emotional, physical, or contextual, and include emotional disturbances, mental health difficulties, sexual violence, STIs, and/or unintended pregnancy (Garcia, Reiber, Massey, & Merriwether, 2012). An individual history of hook-up behaviour has been associated with a variety of mental health factors, including depressive symptoms and feelings of loneliness and regret (Garcia et al., 2012). Despite various health risks, students show little concern related to contracting an STI from penetrative intercourse, fellatio, or cunnilingus during hook-ups (Downing-Matibag & Geisinger, 2009). Approximately 357 million new cases of STIs occur worldwide annually (World Health Organization [WHO], 2019). In South Africa, young people aged 15 to 24 years in clinic or community populations show estimated prevalence rates of STIs as follows: 8.0% to 20.6% for chlamydia, 1.4% to 8.9% for gonorrhoea, 3.1% to 20.0% for trichomoniasis, 31.9% to 53.7% for herpes simplex virus type 2, and 35.8% to 52.4% for bacterial vaginosis (Francis et al., 2018). Additionally, in South Africa, approximately 9% of youths aged 15 to 24 years are infected with HIV (Adefuye et al., 2011). In addition to the consequences mentioned, long-term consequences of RSB may include negative impacts on education and occupation in later adulthood. Young adults are particularly vulnerable to STIs and HIV because of (1) their increased propensity of having multiple sexual partners, either simultaneously or sequentially, and (2) as they often experience difficulty accessing sexual healthcare services (Arnett, 1992; US Department of Health and Human Services, 2012; Weinstock, Berman, & Cates, 2004).

Investigation into the ability of young adults to self-regulate is crucial as they undergo several developmental adjustments at this age, including increased engagement in risk behaviour (Schulenberg, Wadsworth, O'Malley, Bachman, & Johnston, 1996). Self-regulatory skills allow the youth to deal with the numerous emerging and challenging contexts (e.g. drinking alcohol and driving and RSB) in an adaptive manner. However, despite the relevance of self-regulation capabilities to emerging adults, research related to this population is fairly limited (Shen, Cheah, & Yu, 2018). Young adults are expected to investigate vocational, relational, and world views before transitioning into adult roles (Arnett, 2000). Self-regulation is thus essential during this developmental period as young adults are required to make decisions that could affect the rest of their adult lives.

SELF-REGULATION, DATING APPLICATION USE AND RSB

Research shows that high levels of self-regulation, specifically over the long-term, can significantly decrease the likelihood of RSB, particularly by increasing condom and contraceptive use (Moilanen, 2014) and decreasing excessive alcohol use (Quinn & Fromme, 2010). In general, research is in favour of self-regulation being investigated as a possible intervention point against RSB (Crandall, Magnusson, Novilla,

Novilla, & Dyer, 2017; Quinn & Fromme, 2010). Within the South African context, this is of vital importance considering the number of individuals who engage in RSB and thus the alarming rate of HIV/AIDS, STIs, and unplanned pregnancies.

RSB prominent within South Africa includes early age of sexual debut and premarital sex, neglecting to use condoms or contraceptives, having multiple sexual partners, and engaging in sexual activity without disclosing their HIV/AIDS status or engaging in sexual activities under the influence of alcohol or drugs (Adams et al., 2013; Agarwal, De Araujo, & Paudel; 2013; Osuafor & Ayiga, 2016). One large-scale study indicated that 10.6% of South African students at a local university had had their sexual debut before the age of 15 years. This is significant as sexual debut that is undesired or that occurs before 16 years of age has been shown to correlate with increased risk of marital dissolution in later life (Paik, 2011).

RSB has been identified as the second most prominent risk factor for harm within high-mortality developing countries, constituting 10.2% of diseases worldwide (Adams et al., 2013). In South Africa, RSB continues to be a predominant factor in the transmission of STIs and HIV (Brawner et al., 2015; Osuafor & Ayiga, 2016). South African youths are at particular risk, with youths from age 15 to 24 engaging in more RSB than other age groups within the South African context (Hoque, 2011).

The majority of self-regulation research related to SNS usage has mainly focused on Internet addiction and showed that dysfunctional self-regulation is a major contributor to Internet addiction (Błachnio & Przepiorka, 2015; Panek, 2014; Wanjohi et al., 2015; Van Deursen et al., 2017). Not much is therefore known specifically regarding the relationship between self-regulation, dating application use, and RSB. It is, however, apparent from the literature that young adults are becoming more involved in SNS and dating applications in particular. It is also clear that within South Africa, young adults are engaging in high levels of RSB that put them at risk for various consequences. As poor self-regulation can lead to RSB (Moilanen, 2014), and as RSB may be a consequence of using dating applications (Beymer et al., 2014; Champion & Pedersen, 2015; Choi et al., 2016; Sumter et al., 2017; Bhattacharya, 2017), self-regulation may play an important role in the relationship between dating application usage and RSB in young adults.

RESEARCH QUESTION AND PREVIEW OF CHAPTERS 2 AND 3

This study therefore aims to answer the following question: What is the relationship between self-regulation, RSB, and dating application use in young heterosexual adults?

Chapter 2 is presented in article format and will include an abstract, a brief literature review, the methodological process followed, a discussion of the results obtained, ethical considerations, and limitations, and a conclusion. The article is written with the intention of being submitted to the *South African Journal of Psychology* and is thus written to fit its specific requirements. Finally, Chapter 3 will provide a brief self-reflection related to the research process, including personal growth and experience gained. The chapter will include a personal reflection, a discussion of the research process, comments related to the study findings, and a conclusion.

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CHAPTER 2:

MANUSCRIPT FOR SUBMISSION TO SAJP

The relationship between self-regulation, risky sexual behaviour and dating application use in young heterosexual adults

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Abstract

In recent years, dating applications have become increasingly popular among young adults aged 18 to 24 years. This increase in dating application use is of particular relevance given the fact that this age group is particularly vulnerable to engaging in, and experiencing the consequences of, risky sexual behaviour (RSB). *Objective:* To investigate the relationship between self-regulation, dating application use, and (RSB) in young heterosexual South African adults. *Method*: A convenience sample of 151 heterosexual South African young adults between the ages of 18 and 24 years (female =105 [69.5%], male = 46 [30.5%]) participated in the study. Participants completed the Short Self-Regulation Questionnaire (SSRQ) and an adapted version of the Sexual Risk Survey (SRS), as well as questions related to dating application use. *Results*: Participants using dating applications showed several effect sizes of practical importance on measures of RSB when compared to those who had not used dating applications. Significant gender differences were identified that suggest that male participants engage in more RSB, particularly when making use of dating applications. Male participants also showed lower persistence when using dating applications. Self-regulation did not appear to predict variance of RSB in females, while decision making did predict variance of RSB in males. *Conclusion:* Dating application use appears to be linked to increased RSB, particularly in males. Decision making and persistence can be used as intervention points in order to address RSB in the future.

Keywords: *self-regulation, dating application, risky sexual behaviour, South African young adults, 18 to 24 years*

Social networking sites (SNSs) have become integrated into the daily lives and basic functioning of people, and particularly young adults worldwide (Champion & Pedersen, 2015; Cookingham & Ryan, 2015; Groth, Lin, Fan, & Chau, 2014; Longo, & Martin, 2017). SNSs have expanded to many horizons, including online dating. In the past, online dating referred specifically to dating websites; however, in recent years, mobile dating applications have emerged and have become exceptionally popular with young adults. Between 2014 and 2016, online dating application usage by individuals aged 18 to 24 increased from 10% to 27% (Smith, 2017), with Tinder being one of the most popular choices for this age group (Dredge, 2015; Sawyer, Smith, & Benotsch, 2017).

While dating websites focus on a critical analysis of who to match with whom based on complex algorithms, mobile dating applications in contrast can be defined as SNSs that target convenience, closeness in physical location, and physical attraction. Closeness in physical location is targeted through geosocial networking (GSN) applications, which specifically use Global Positioning System (GPS) tracking to locate other users for interaction based on proximity (Beymer et al., 2014; Sawyer et al., 2017). Mobile dating applications are generally more impulse based (Carpenter & McEwan, 2016; March, Grieve, Marrington, & Jonason, 2017; Timmermans & De Caluwé, 2017), and may increase user convenience by making it easier to meet with individuals (Sutter, 2010).The rise in dating application use has sparked research investigations that have indicated increased levels of risky sexual behaviour (RSB) (Beymer et al., 2014; Bhattacharya, 2017; Champion & Pedersen, 2015; Choi et al., 2016; Choi, Wong, & Fong, 2017; Sawyer et al., 2017; Sumter, Vandenbosch, & Ligtenberg, 2017). RSB is defined by Brawner, Alexander, Fannin, Baker, and Davis (2015, p. 144) as

> "[a]ny sexual behaviour that increases the probability of exposure to HIV, STIs or unwanted pregnancies, including but not limited to

> unprotected genital contact (oral, anal, or vaginal), with or without penetration, orgasm, or ejaculation; concurrent sexual partners or multiple sequential sexual partners; sexual activity under the influence of drugs and/or alcohol; sexual activity in exchange for emotional support or material goods (e.g., money, drugs).

In particular, research reports indicate that dating application users show increased levels of (1) substance use during sexual activity, (2) unprotected sexual activity, (3) sexually transmitted infection (STI) rates, and (4) sexual partners (Choi et al., 2017; Sawyer et al., 2017). Every year, approximately 357 million new cases of STIs occur worldwide (World Health Organization, 2019). In South Africa, young people aged 15 to 24 years in clinic or community populations show estimated prevalence rates of STIs as follows: 8.0% to 20.6% for chlamydia, 1.4% to 8.9% for gonorrhoea, 3.1% to 20.0% for trichomoniasis, 31.9% to 53.7% for herpes simplex virus type 2, and 35.8% to 52.4% for bacterial vaginosis (Francis et al., 2018).

Young or emerging adults, ages 18 to 24 years, are particularly at risk as this transitional developmental period is often characterised by unstable relationships, movement between committed relationships, spontaneous romantic engagements, and “hook-ups”, defined as uncommitted and emotionally uninvolved sexual encounters or “one-night stands” (Garcia & Reiber, 2008; Paul, Wenzel, & Harvey, 2008). Behaviours associated with hook-ups include flirting, alcohol consumption, hanging out, and activities of physical intimacy, including kissing, touching, oral sex, vaginal sex, and anal sex (Lewis, Granato, Blayney, Lostutter, & Kilmer, 2012). Hook-ups are commonly associated with various dating applications as they increase the ease with which dating application users can meet and engage with possible partners. As a result, young adults are particularly vulnerable to unplanned pregnancy, HIV, and STIs because of (1) their increased

propensity of having multiple sexual partners, either simultaneous or sequentially, and (2) as they often experience difficulty accessing sexual healthcare services (Arnett, 1992; United States Department of Health and Human Services, 2012; Weinstock, Berman, & Cates, 2004).

RSB prominent within South Africa includes early age of sexual debut and premarital sex, neglecting to use condoms or contraceptives, having multiple sexual partners, and engaging in sexual activity without disclosing their HIV/AIDS status or engaging in sexual activities under the influence of alcohol or drugs (Agarwal, De Araujo, & Paudel; 2013; Adams et al., 2013; Osuafor & Ayiga, 2016). In South Africa, RSB therefore continues to be a predominant factor in the transmission of STIs and HIV (Brawner et al., 2015; Osuafor & Ayiga, 2016). Research indicates that South Africans aged 15 to 24 years are at particular risk as they engage more often in RSB than other age groups (Hoque, 2011). Approximately 9% of South African youths aged 15 to 24 years are infected with HIV (Adefuye et al., 2011). Within a South African context, where RSB is already a serious concern (Adams et al., 2013; Osuafor & Ayiga, 2016) and where the HIV/AIDS crisis continues to threaten the lives of millions of individuals (Brawner et al., 2015), the addition of GSN dating applications could have a drastic effect on the social normalcy attributed to this behaviour, and subsequently the frequency with which RSB occurs (Carpenter & McEwan, 2016). Dating applications may therefore normalise casual sex and lead to increased cases of unprotected sex, HIV/AIDS, STIs, and unplanned pregnancies, especially if effective self-regulation is not applied.

Self-regulation can be defined as the conscious or unconscious regulation of emotions, thoughts, motivations, cognitions, social interactions, and physical behaviours in relation to changing environments (Karoly, 1993). As successful self-regulation is dependent on awareness of one’s own behaviour (Vago & Silbersweig,

2012), it is a necessary component of adaptive and socially acceptable behaviour. Effective self-regulation allows individuals to make decisions that focus on long-term gains rather than on short-term benefits (Sokol & Müller, 2007); as such it can significantly decrease the likelihood of RSB, particularly by increasing condom and contraceptive use (Moilanen, 2014) and decreasing excessive alcohol use (Quinn & Fromme, 2010). Poor self-regulation, in contrast, has been linked with various personal and social problems, including alcohol abuse (Carey, Neal, & Collins, 2004), impulse- and compulsive-related disorders (Shalev & Sulkowksi, 2009), RSB (Moilanen, 2014), as well as emotional problems, substance dependence, eating disorders, and destructive behaviours such as crime, violence, and gambling (Quinn & Fromme, 2010; Baumeister & Vohs, 2004). In general, research is in favour of self-regulation being investigated as a possible intervention point to mitigate RSB (Crandall, Magnusson, Novilla, Novilla, & Dyer, 2017; Quinn & Fromme, 2010). This is of vital importance considering the number of individuals, within the context of South African young adults, who engage in RSB, and thus the alarming rate of HIV/AIDS, STIs, and unplanned pregnancies.

However, despite the relevance of self-regulation in this regard, there is a lack of research on the role self-regulation plays in dating application use. More specifically, research related specifically to young adulthood is fairly limited (Shen, Cheah, & Yu, 2018); in South Africa, research related to self-regulation has primarily focused on older adults (Boshoff, 2014; Steyn, Roos, & Botha, 2018), university students (Cloete, Botha, & Breytenbach, 2012; Le Grange, 2018), or children (Abousselam, Naudé, Lens, & Esterhuyse, 2016; Harrison, 2011), or focused on aspects of young adults like interpersonal meaning making (Botha, 2014) and weight loss (Botha, 2018). Much of the research that has already been conducted regarding dating applications has focused on homosexual populations (Beymer et al., 2014; Ko, Tseng, Huang, Chen, & Hsu, 2016; Queiroz et al.,

2017; Tang, et al., 2016), while research specific to heterosexual populations is limited (Bhattacharya, 2017; Choi et al., 2016; Choi et al., 2017; Sawyer et al., 2017; Shapiro et al., 2017; Sumter et al., 2017), and no research has been conducted within the South African context or considered the role of self-regulation. There is thus a gap in research specifically related to the dynamics between self-regulation, dating application use, and RSB in young heterosexual South African adults that needs to be addressed. This study therefore aimed to answer the following question: What is the relationship between self-regulation, RSB, and dating application use in young heterosexual adults? It is expected that the findings of the study may provide a departure point for identifying possible risk factors and intervention points for RSB, particularly within the young South African adult population.

Method

Participants

A convenience sample of 151 heterosexual South African young adults (female =105 [69.5%]; male = 46 [30.5%]) was obtained via an advertisement posted on the Facebook page, “South African Youth Business Unity”. Users of this Facebook group may not necessarily be representative of all South African young adults, but may represent young South African adults who have access to social media platforms including, but not limited to, various dating applications. Participants were aged between 18 and 24 years old (mean [M] = 22.03; standard deviation [SD] = 1.73). Of the sample, 43.05% indicated that they had made use of dating applications at some point; this group is henceforth referred to as the “Ever” group and will be compared with the “Never” group (56.95%). Furthermore, 63.08% of the “Ever” group indicated that they had used a dating application in the last six

months. While various dating applications exist, 95% of participants who had used a dating application in the last six months indicated that they had used Tinder.

Measures

The study made use of two pre-existing measures, the Short Self-regulation Questionnaire (SSRQ) (Carey et al., 2004) and the Sexual Risk Survey (SRS) (Turchik & Garske, 2009), in order to measure self-regulation and RSB respectively. Both measures were incorporated into a single online Google Forms questionnaire, which was accessed by participants through a link on the Facebook page, "South African Youth Business Unity". In order to determine whether factor analysis would be appropriate, Kaiser's measure of sampling adequacy (MSA), which gives an indication of the inter-correlations among variables, was computed for each confirmatory factor (Tabachnick & Fidell, 2001). Guidelines according to Hair, Andersen, Tatham, and Black (1998) were used to ensure that the MSAs were appropriate. In addition, Cronbach's alpha scores were used as an indication of internal reliability, where scores of 0.6 and above were seen as indicators of good internal reliability (Field, 2009).

The SSRQ consists of 31 items and measures general self-regulation. In this study, the seven-factor structure proposed by Potgieter and Botha (2009) for the South African context was used, namely (1) Monitoring, (2) Decision Making, (3) Learning from Mistakes, (4) Persistence, (5) Self-Evaluation, (6) Creativity, and (7) Mindful Awareness. In this study, the factor analysis on Persistence indicated an MSA of 0.75; however, two factors were retained by the Mineigen criterion. It was, however, decided to maintain only one factor for Persistence for the following reasons: (1) the SSRQ is a standardised questionnaire, (2) the Cronbach's alpha score for this factor was 0.76, and (3) the one factor still explains approximately 50% of the variance within the data. Factor analyses indicated that

all other SSRQ factors measured MSAs higher than 0.5 and retained one factor per construct, thus indicating good construct validity.

The SRS contains 23 items that constitute five factors of RSB, namely (1) Uncommitted Partners, (2) Risky Acts, (3) Impulsive Behaviours, (4) Intent to Engage in RSB, and (5) Risky Anal Acts (Turchik & Garske, 2009). In this study, the SRS was adapted such that participants answered all questions in the form of four-point Likert scales. The Likert scales were as follows: 1 = never, 2 = seldom, 3 = often, and 4 = very often (e.g. *How many times have you left a social event with someone you just met?*), or alternatively as frequencies: 1 = none, 2 = very few, 3 = some, and 4 = several (e.g. *How many partners have you engaged in sexual behaviour with but not had sex with?*). This adaption was implemented mainly to ensure the reliability of constructs so that respondents did not need to count, but instead reported their perceptions. Cronbach's alpha scores for all factors measured by the two questionnaires indicated good internal reliability, and ranged between 0.6 and 0.88. The factor analysis indicated that all factors measured MSAs higher than 0.5, thus indicating good construct validity. Thus, taking into account the MSA values, percentage variances explained, as well as Cronbach's alphas scores, construct validity was assured on all the subtests of both measuring instruments in this study.

Procedure

Participants interested in participating in the study clicked on a Google Forms link attached to the Facebook advertisement and completed the SSRQ, the SRS, as well as questions related to dating application use. Data obtained from the questionnaires were then statistically analysed.

Data analysis

Due to the fact that no random sampling was conducted, Cohen's effect sizes, *d* (Cohen, 1988), were used to interpret the differences between group means. Additionally, although no inferential statistics were interpreted, *p*-values are reported throughout, as if random sampling is assumed for completeness' sake. The constructs of the SSRQ and Total RSB were found to be fairly normally distributed within the sample population and therefore Pearson's correlation coefficients were calculated, with the assumption that the constructs' data were normally distributed. This was done in order to determine whether linear relationships existed between the factors of self-regulation and Total RSB. Thereafter, multiple regression analyses were used to test whether the self-regulation factors, gender, and/or dating application use could practically significantly predict participants' Total RSB. Guidelines for the interpretation of *r* are as follows: $r = |0.1|$ (small effect); $r = |0.3|$ (medium effect (noticeable with the naked eye) and $r = |0.5|$ (large effect or practically significant) (Cohen, 1988). In this study, correlations between these values were therefore interpreted such that $r \geq |0.2|$ represents a medium effect and $r \geq |0.40|$ represents a large effect.

Effect sizes indicate practical significance as the extent to which a difference between group means is large enough to have an effect in practice (Steyn, 2009). The following guidelines were used to interpret *d*-values regarding differences between means: small effect: $d = |0.2|$; medium effect (noticeable with the naked eye), $d = |0.5|$; and large effect (practically significant), $d \geq |0.8|$. In this study, effect sizes were interpreted such that $d \geq 0.35$ represents a medium effect and $d \geq 0.65$ represents a large effect. Additionally, *r* was used for the effect size associated with the Wilcoxon test in the regression analysis of the male "Ever" and "Never" groups.

Ethical issues

Ethical approval was obtained from the Health Research Ethics Committee (HREC) of the North-West University (NWU), with approval number NWU-00054-18-S1. Before the commencement of data collection, written consent was obtained from a third-party Facebook administrator in order to post an advertisement for the study on the Facebook page. The advertisement that was posted included a link to an informed consent form, which highlighted the research topic, possible risks, and the participants' ability to exit the study link at any point should they not wish to continue participating in the study. Confidentiality was ensured as no personal data were requested at any point in the study (name, surname, or identification number). Optional space was provided to participants to include their email address if they wanted to receive feedback on the study's results; however, the email addresses were removed before data analysis commenced and only the researchers had access to that information. All the responses were downloaded to an encrypted file and will be securely stored until the completion of the study.

Results

Pearson's correlations between Total RSB and SSRQ factors

Table 1. Pearson's correlation coefficients between the subtests of the SSRQ and Total RSB for the study population

			Total RSB	
	N	**SSRQ subtest**	*r*	*p*-value
Ever	65	Monitoring	-0.20^{Δ}	0.11
		Decision Making	-0.28^{Δ}	0.02*
		Learning from Mistakes	-0.28^{Δ}	0.02*
		Persistence	-0.26^{Δ}	0.04*
		Self-Evaluation	-0.30^{Δ}	0.02*
		Creativity	-0.14	0.27
		Mindful Awareness	-0.29^{Δ}	0.02*

Never	86	Monitoring	-0.01	0.92
		Decision Making	-0.12	0.27
		Learning from Mistakes	-0.23^{Δ}	0.03*
		Persistence	-0.21^{Δ}	0.05*
		Self-Evaluation	-0.14	0.21
		Creativity	-0.10	0.35
		Mindful Awareness	-0.18	0.09

Note: $r \geq |0.2|$ interpreted as a medium correlation
p-value = *p*-value of Pearson's correlations when random sampling is assumed
$^{\Delta}$ = shows a medium effect in practice of the correlation coefficient *r*
* = *p*-value is statistically significant at 0.05 level when random sampling is assumed

For participants in the "Ever" group, Pearson's correlations (Table 1) indicated medium correlations of practical importance between Total RSB and almost all self-regulation factors, including (1) Monitoring, (2) Decision Making, (3) Learning from Mistakes, (4) Persistence, (5) Self-Evaluation, and (6) Mindful Awareness. In contrast, participants in the "Never" group only showed medium correlations of practical importance between Total RSB and (1) Persistence and (2) Learning from Mistakes.

Differences between groups

Table 2. Descriptive statistics and effect sizes of the subtests of the SRS and SSRQ for differences between participants that have "Ever" or "Never" used a dating application

Subtest	**Dating app use**	**N**	**Mean**	**SD**	***p*-value (when random sampling is assumed)**	***d*-value**
			SRS subtests			
Uncommitted Partners	E	65	14.03	5.04	0.0001**	0.55^{Δ}
	N	86	11.28	3.64		
Risky Acts	E	65	10.23	3.91	0.82	0.04

	N	86	10.37	3.75		
Impulsive	E	65	9.79	3.66	0.0028**	0.44$^{\Delta}$
Behaviour	N	86	8.19	2.81		
Intent to Engage	E	65	3.49	1.64	0.0002**	0.53$^{\Delta}$
	N	86	2.63	1.13		
Risky Anal Sex	E	65	3.48	1.28	0.91	0.02
	N	86	3.50	1.19		
Total RSB	E	65	41.02	12.91	0.0063**	0.39$^{\Delta}$
	N	86	35.97	9.52		
SSRQ subtests						
Monitoring	E	65	14.49	3.00	0.99	0.00
	N	86	14.50	3.15		
Decision Making	E	65	16.89	4.44	0.76	0.05
	N	86	16.67	4.42		
Learning from	E	65	15.03	3.13	0.88	0.02
Mistakes	N	86	15.10	2.97		
Persistence	E	65	22.71	4.38	0.34	0.15
	N	86	23.37	4.04		
Self-Evaluation	E	65	15.28	2.77	0.64	0.08
	N	86	15.49	2.78		
Creativity	E	65	11.69	2.10	0.58	0.09
	N	86	11.50	2.16		
Mindful Awareness	E	65	19.12	3.22	0.18	0.21
	N	86	18.32	3.88		

Note: E = ever, N = never, SD = standard deviation, *p*-value when random sampling is assumed *p*-value = *p*-value of independent t-test when random sampling is assumed
* = *p*-value is statistically significant at 0.05 level according to t-test results for independent groups
** = *p*-value is statistically significant at 0.01 level according to t-test results for independent groups
Δ Medium effect in practice, ΔΔ Large effect in practice

As can be seen from Table 2, differences of medium effects in practice and thus noticeable with the naked eye, according to Cohen (1988), were found between the "Ever" group and the "Never" group. The results indicate that the "Ever" group showed higher scores of practical importance, with medium effect regarding Total RSB (M = 41.02 > M = 35.97 (*d* = 0.39)), Impulsive Behaviour (M = 9.79 > M = 8.19 (*d* = 0.44)), Uncommitted Partners (M = 14.03 > M = 11.28 (*d* = 0.55)), and Intent to Engage (M = 3.49 > M = 2.63 (*d* = 0.53)).

Table 3. Descriptive statistics and effect sizes of the subtests of the SRS and SSRQ for differences between female participants that have "Ever" or "Never" used a dating application

Subtest	Dating app use	N	Mean	SD	*p*-value	d-value
SRS subtests						
UP	E	41	13.02	4.80	0.009**	0.44$^{\Delta}$
	N	64	10.92	3.30		
RA	E	41	9.68	3.93	0.35	0.18
	N	64	10.40	3.79		
IB	E	41	9.10	3.54	0.07	0.31
	N	64	7.98	2.65		
ITE	E	41	3.05	1.40	0.008**	0.44$^{\Delta}$
	N	64	2.44	0.92		
RAA	E	41	3.41	3.06	0.44	0.15
	N	64	3.61	3.28		
T-RSB	E	41	38.27	11.78	0.16	0.25
	N	64	35.36	8.99		
SSRQ subtests						
M	E	41	14.88	3.04	0.61	0.10
	N	64	14.56	3.08		
DM	E	41	16.83	4.30	0.72	0.07
	N	64	16.53	4.02		
LM	E	41	15.12	3.35	1.00	0.00
	N	64	15.13	2.91		
P	E	41	23.07	4.69	0.85	0.03
	N	64	23.23	3.93		
SE	E	41	15.49	2.85	0.76	0.06
	N	64	15.66	2.70		
C	E	41	11.98	2.18	0.37	0.18
	N	64	11.59	2.15		
MA	E	41	19.15	3.23	0.28	0.20
	N	64	18.31	4.17		

Note: E = Ever, N = Never, SD = standard deviation

UP = Uncommitted Partners, RA = Risky Acts, IB = Impulsive Behaviour, ITE = Intent to Engage, RAA = Risky Anal Acts, T-RSB = Total RSB, M = Monitoring, DM = Decision Making, LM = Learning from Mistakes, P = Persistence, SE = Self-Evaluation, C = Creativity, MA = Mindful Awareness

* *p*-value is statistically significant at 0.05 level according to t-test results for independent groups

** *p*-value is statistically significant at 0.01 level according to t-test results for independent groups

$^{\Delta}$ Medium effect in practice, $^{\Delta\Delta}$ Large effect in practice

The results further indicate significant gender differences. When comparing female participants (Table 3) in the "Ever" and "Never" groups, female participants in the "Ever" group showed higher scores of practical importance with medium effect for Uncommitted Partners (M =13.02 > M = 10.92 (*d* = 0.44)) and Intent to Engage (M = 3.05 > M = 2.44 (*d* = 0.44)).

Table 4. Descriptive statistics and effect sizes of the subtests of the SRS and SSRQ for differences between male participants that have "Ever" or "Never" used a dating application

Subtest	Dating app use	N	Mean	SD	*p*-value[1]	*d*-value	*p*-value[2]	r
SRS subtests								
UP	E	24	15.75	5.08	0.02*	$0.69^{\Delta\Delta}$	0.02*	0.23^{Δ}
	N	21	12.24	4.49				
RA	E	24	11.17	3.78	0.34	0.28	0.32	0.15
	N	21	10.10	3.70				
IB	E	24	10.97	3.63	0.03*	0.63^{Δ}	0.02*	0.22
	N	21	8.67	3.26				
ITE	E	24	4.25	1.78	0.04*	0.60^{Δ}	0.03*	0.22^{Δ}
	N	21	3.19	1.50				
RAA	E	24	3.58	2.94	0.27	0.26	0.73	0.09
	N	21	3.19	2.96				
T-RSB	E	24	45.72	13.63	0.03*	0.61^{Δ}	0.04*	0.21^{Δ}
	N	21	37.38	11.09				
SSRQ subtests								
M	E	24	13.83	2.87	0.39	0.25	0.18	0.17
	N	21	14.62	3.19				
DM	E	24	17.00	4.77	0.68	0.12	0.76	0.08
	N	21	17.57	4.38				
LM	E	24	14.88	2.79	0.77	0.08	0.61	0.11
	N	21	15.14	3.26				
P	E	24	22.08	3.79	0.05*	0.59^{Δ}	0.05	0.21^{Δ}
	N	21	24.33	3.61				
SE	E	24	14.92	2.65	0.50	0.19	0.47	0.13
	N	21	15.43	2.29				
C	E	24	11.21	2.00	0.65	0.13	0.82	0.07
	N	21	11.48	1.94				
MA	E	24	19.08	3.27	0.58	-0.16	0.42	0.13
	N	21	18.57	2.89				

Note: E = ever, N = never, SD = standard deviation, *p*-value[1] = *p*-value for independent t-test when random sampling is assumed, *p*-value[2] = *p*-value for Wilcoxon test when random sampling is assumed
UP = Uncommitted Partners, RA = Risky Acts, IB = Impulsive Behaviour, ITE = Intent to Engage, RAA = Risky Anal Acts, T-RSB = Total RSB, M = Monitoring, DM = Decision Making, LM = Learning from Mistakes, P = Persistence, SE = Self-Evaluation, C = Creativity, MA = Mindful Awareness
* *p*-value is statistically significant at 0.05 level according to t-test results for independent groups
** *p*-value is statistically significant at 0.01 level according to t-test results for independent groups
$^{\Delta}$ Medium effect in practice, $^{\Delta\Delta}$ Large effect in practice

Male participants in the "Ever" group showed higher scores of practical significance with large effects for Uncommitted Partners (M =15.75 > M = 12.24 (*d* = 0.69)) when compared with those in the male "Never" group. The results further indicate that male participants (Table 4) in the "Ever" group showed higher scores of practical importance with medium effect regarding Impulsive Behaviour (M = 10.97 > M = 8.67 (*d* = 0.63)), Intent to Engage (M = 4.25 > M = 3.19 (*d* = 0.60)), and Total RSB (M = 45.72 > M = 37.38 (*d* = 0.61). Additionally, male participants in the "Ever" group showed practically important lower scores on Persistence with medium effect (M = 22.08 < M = 24.33 (*d* = 0.59)) than the "Never" group.

Regression analysis

Table 5. Regression analysis of the study population

Independent variable	**Parameter estimate**	**Standard error**	**t-value**	***p*-value**
Constant	57.82	7.57	7.63	<0.0001
Monitoring	0.80	0.47	1.72	0.088
Decision Making	-0.17	0.30	-0.55	0.58
Learning from Mistakes	-0.54	0.39	-1.40	0.16
Persistence	-0.35	0.37	-0.94	0.35
Self-Evaluation	-0.59	0.50	-1.19	0.24
Creativity	0.12	0.60	0.19	0.85

Mindful Awareness	-0.23	0.34	-0.69	0.49
Gender	4.97	1.93	2.58	0.01*
Dating App Use Ever	-4.27	1.81	-2.36	0.02*

* *p*-value is statistically significant at 0.05 level

The results of the regression for the total sample (N=151) in Table 5 indicated that gender ($p < 0.01$) and dating application use ($p < 0.02$) indicate statistically significant relationships with Total RSB when random sampling is assumed. Based on this information, the decision was made to analyse the data within four groups. These groups were divided as follows: (1) Female "Never", (2) Female "Ever", (3) Male "Never", and (4) Male "Ever". Pearson's correlations were calculated for each group in order to determine whether further regression analyses were justified for each group individually.

Group 1: Female "Never"

Pearson's correlation analysis conducted on the Female "Never" group showed no practically significant correlations among any of the self-regulation factors and Total RSB. Regression analyses were therefore not justified, and subsequently no further regression analyses were conducted on this group.

Group 2: Female "Ever"

Pearson's correlation analysis of the Female "Ever" group showed correlation with medium effect between Total RSB and several other self-regulation factors, namely: Monitoring, Persistence, Self-Evaluation, Creativity, and Mindful Awareness. However, subsequent regression analysis showed that no regression model of any practically significance could be found for the aforementioned correlations. Therefore, none of the self-regulation variables predicted variance in RSB within this group.

Group 3: Male "Never"

Pearson's correlation coefficients indicated that Self-Evaluation (r = -0.48) and Creativity (r = -0.47) both showed practically significant correlations with Total RSB when random sampling was assumed. Additionally, these two variables account for a practically significant portion of the variability of RSB (R^2 = 0.25). However, a regression analysis of these two variables indicated that neither variable predicted RSB with any practical significance. None of the self-regulation variables thus significantly predicted RSB in the Male "Never" group.

Group 4: Male "Ever"

Table 6. Regression analysis of male participants who have used a dating application

Independent variable	Parameter estimate	SD error	t-value	error	*p*-value
K	75.45	16.31	4.63	-	-
DM	-1.46	0.79	-1.86	0.01	0.08
LM	-1.21	1.18	-1.02	0.05	0.32
MA	0.69	1.28	0.54	0.08	0.60

* *p*-value is statistically significant at 0.05 level, ** *p*-value is statistically significant at 0.01 level
Δ Medium effect in practice, ΔΔ Large effect in practice
K = Constant, DM = Decision Making, LM = Learning from Mistakes, MA = Mindful Awareness

Pearson's correlation coefficients for the Male "Ever" group (N=24) were as follows. Between Total RSB and Decision Making, r = -0.52, and between Total RSB and Learning from Mistakes, r = -0.40, thus both show practical significance. Between Total RSB and Mindful Awareness, r = -0.37, yielding correlations with medium effect in practice. A regression analysis indicated that these three constructs of the SSRQ account for a practically significant proportion of the variance of Total RSB (R^2 = 0.30). Of these three constructs investigated, only Decision Making significantly predicted variance in Total RSB, on a 0.10 level (p = 0.08), when random sampling is assumed. However, the squared semi-partial correlation (r = 0.3), which is the unique contribution of Decision Making to the variance of Total RSB, is of a medium practical effect, and thus noticeable with the naked eye (Cohen, 1988). Decision Making can thus be used as a point of intervention.

Discussion

The aim of this study was to investigate the relationships that exist between self-regulation, dating application use, and RSB; with the ultimate intention of identifying future points of intervention against RSB within the South African young adult population. These relationships were investigated on three levels of statistical analysis.

Firstly, factors of self-regulation and RSB between the "Ever" and "Never" groups were investigated for correlations. Analysis of these data indicates that considerably more factors of self-regulation correlate negatively to Total RSB when individuals have used dating applications. This finding is significant because while some factors of self-regulation do correlate with Total RSB in the "Never" group, the addition of dating application use shows a marked difference in the number of correlations. Therefore, individuals who make use of dating applications and who engage in RSB have an increased likelihood of poor self-regulation, when compared with individuals who do not use dating applications. The results appear to support previous research that showed an increased risk of RSB in dating application use (Choi et al., 2016; Sawyer et al., 2017; Shapiro et al., 2017), as well as effective self-regulation acting as a buffer against RSB (Kalina, Orosová, Kriaucioniene, & Lukács, 2017; Quinn & Fromme, 2010).

Secondly, the "Ever" and "Never" groups were compared in terms of the effect sizes of the various self-regulation and RSB factors. Three important results were identified from this analysis: (1) the "Ever" and "Never" groups showed RSB differences of practical importance, (2) other than Persistence, self-regulation was virtually the same between the two groups, and (3) considerable gender differences existed between the two groups, with

male participants showing more effect sizes of practical importance and practical significance than the female participants. These results suggest again that dating application use is related to differences between the groups, and in particular corresponds with higher rates of RSB. It is, however, important to note that as no random sampling was done in this study, the results are not causative. This means that while there are noteworthy differences between the "Ever" and "Never" groups, it is not possible to determine whether these differences existed before the participants started using dating applications, or whether dating application use has caused the differences between the group.

Further analysis of the three "Ever" and "Never" groups (total population, males, and females) showed consistently higher scores for all the "Ever" groups, with practical importance, for the RSB factors Uncommitted Partners and Intent to Engage. This finding is likely related to the ease with which dating applications allow their users to engage. Participants using dating applications are exposed to numerous potential partners, many of whom are using the applications with the intent to engage with others. This is evidenced in a study by Sumter et al. (2017), where out of 163 Tinder users, 45.5% had met their match in person and 18.6% had had a one-night stand following a Tinder match. In addition to GPS tracking, the ability to download dating applications for free, as well as the ability to carry the dating application with the individual (on their mobile device), further increase the user convenience (Choi, Wong, & Fong, 2017). It is thus possible that the increase in user convenience, increased exposure to possible partners, and the intent of many dating application users to meet romantic partners are related to the higher scores of participants of the factors Uncommitted Partners and Intent to Engage.

Looking at the total population highlights two other factors of RSB that appear to be elevated in the "Ever" group in comparison with the "Never" group, namely Total RSB and Impulsive Behaviour. The larger effect sizes on the Total RSB factor further indicate that even without the consideration of gender, the "Ever" group showed some relation to higher levels of RSB than the "Never" group. Again, due to the lack of random sampling within the study, two unique possibilities exist: (1) participants in the "Ever" group had an increased and pre-existing propensity towards RSB before the onset of dating application use and these individuals thus sought dating applications more readily than those with lower propensities towards RSB; or (2) both groups had similar propensities towards RSB, but the use of dating applications subsequently led to heightened levels of RSB in the "Ever" group. It is not possible to determine which possibility best reflects the true nature of the increased RSB within the "Ever" group, and this should be investigated further in the future.

Impulsive Behaviour, which also showed a practically important effect size, can be defined as the inability to inhibit one's behaviour and the tendency to act without regard of consequences (Hayaki, Anderson, & Stein, 2012). It is therefore unsurprising that impulsive decision making has been shown to be related to the engagement in sexual acts while using drugs and/or alcohol, engaging in unprotected sexual acts, and sexual acts with multiple partners and/or with a stranger (Charnigo et al., 2013). Gender differences related to impulsive behaviour show that males have higher scores with larger and more practically relevant effect sizes than females. While research on gender differences related to impulsive behaviour shows inconsistencies (Dir, Coskunpinar, &

Cyders, 2014), some research has shown that young males report higher levels of impulse-based sensation seeking and risk-taking behaviour (Dir et al., 2014).

Other important gender differences identified by the study include higher mean scores for men on all RSB factors when directly comparing the Male and Female "Ever" groups. In addition, the results indicate larger practically relevant effect sizes for Uncommitted Partners, Impulsive Behaviour, Intent to Engage, and Total RSB when compared with the female "Ever" and "Never" effect sizes. This implies that dating application use is related to even more heightened RSB for males than for females. Another important gender difference is the medium effect of Persistence on the Male "Ever" and "Never" groups, with males scoring considerably lower on this factor when using dating applications. This result implies that men who use dating applications may experience more difficulty in regulating their impulses when compared with men who do not use dating applications and may thus continue to engage in behaviours even if they are harmful or unwanted. Research has shown that male dating application users view more profiles (Hitsch, Hortaçsu, & Ariely, 2010), have longer account lifetimes (Lin & Lundquist, 2013), and visit online dating sites more often (Valkenburg & Peter, 2007). While further research is needed, this may indicate that males, particularly those using dating applications, may be more likely to be at risk of developing dating application addiction, as they struggle to regulate their dating application behaviours.

Other than Persistence and Decision Making (discussed below), the remaining factors of self-regulation did not show practically relevant differences between any of the "Ever" and "Never" groups. This result appears to suggest that there are no other readily

observable gender differences for self-regulation within this sample, which is consistent with research by Cloete et al. (2012). Their study on 384 South African university students indicated very similar results regarding self-regulation, with Persistence and Decision Making showing lower scores, of practical importance, for males on the SSRQ. This consistency indicates that young adult males may have a propensity towards poorer self-regulation in terms of Persistence and Decision Making, which are crucial in effective self-regulation, especially in health-related self-control (Martijn, Alberts, & De Vries, 2006). According to Christakou (2014), risky decision making is associated with poor self-control and lack of foresight, and often indicates a lack of sophisticated decision-making ability to differentiate between those instances where one needs to take chances on quick, possibly emotive, decisions, and instances where one needs to stop, calculate, and reason. As this is a developmental skill that matures over time, the risk of poor decision making in young adults is perhaps not a surprise, yet it does not explain the difference between the two gender groups. This needs to be explored in future research, taking into account how differences in gender maturation may influence decision making in risky, short-term, rewarding contexts. Crucially, research by Dir et al. (2014) highlighted the relationship between Persistence and Decision Making; indicating that better decision making can only be effective if the individual is consistently able to persist in making and acting out better decisions.

The third and final level of statistical analysis was conducted in order to determine whether any of the self-regulation factors, gender, or dating application use could significantly predict Total RSB. The results once again indicated significant gender

differences with no regression models fitting either female group (“Never” or “Ever”). Although the results from the Male “Never” group indicated practically significant negative correlations between the self-regulation factors of Self-Evaluation (r = -0.48) and Creativity (r = -0.47) respectively with Total RSB, no model of prediction was found. In the Male “Ever” group, strong negative correlations between RSB with Decision Making (r = -0.52), Learning from Mistakes (r = -0.40), and Mindful Awareness (r = -0.37) respectively were present. The regression analysis indicated that the three aforementioned variables accounted for 30% of the variance of Total RSB. However, of the three variables investigated, only Decision Making significantly predicted variance in RSB (p = 0.08). Decision making can thus be used as a point of intervention to reduce Total RSB. While some researchers have indicated that self-regulation should be investigated as a point of intervention against RSB (Crandall et al., 2017; Quinn & Fromme, 2010), this study highlights the specific influence of decision making and its role in predicting Total RSB. This finding is echoed by research conducted by Ross et al. (2018), which suggested that poor decision making predicts RSB and that decision making should thus be targeted as a point of intervention in order to reduce RSB. Given the aforementioned practical importance and interplay between Persistence and Decision Making, it is hypothesised that young adults, and particularly males, who are at risk of the consequences of RSB may thus benefit from neurocognitive, cognitive behavioural, or other programmes aimed at improving their decision making and persistence skills.

Limitations

The convenience sample obtained for this study (N=151) was relatively small and caution should thus be exercised in generalising the results to the South African young adult population. However, in saying this, the study population did approximate normal distribution and the effect sizes showed practical significance, even within the small sample. It is thus likely that the results are a strong indication of the true trends within the broader population. Next, the study operationalised "dating application use" as individuals who have ever used any dating application, while engagement in sexual behaviours was assessed for the past six months. It is possible that future, large scale studies, which operationalise "dating application use" in terms of frequency and duration of use, may identify more in-depth results and additional trends within the population. Participants in this study furthermore decided to participate in the study based on their exposure to the original Google Forms link; the results are thus subjected to self-selection bias. Additionally, participants were asked to self-report their engagement in sexual behaviours, as well as their self-regulation tendencies, and their reports may thus have been be over- or underreported. Finally, due to the retrospective nature of the study, as well as the lack of random sampling, no causal relationships can be concluded from this study.

Conclusion

The aim of this study was to investigate the relationships between self-regulation, dating application use, and RSB within the South African young adult population, with the

ultimate intention of identifying possible intervention points to mitigate RSB. It was found that individuals who make use of dating applications show more correlations between factors of self-regulation and Total RSB. Furthermore, substantial differences were found between the “Ever” and “Never” groups. In particular, the research suggests that individuals who make use of dating applications engage in more RSB and that significant gender differences related to RSB exist, with male participants showing higher scores on most RSB factors. Self-regulation was similar between both groups, with only Persistence showing practical importance, and only in the male sample. Finally, the regression analysis indicated that within the Male “Ever” group, Decision Making can predict variability in Total RSB with practical significance and can therefore be used, in conjunction with Persistence, as intervention points against RSB. In conclusion, this research study showed considerable interactions between self-regulation, dating application use, and RSB. It can be concluded that young South Africans who use dating applications are at a greater risk of engaging in RSB and that decision-making and persistence skills development may be utilised as buffers against the consequences of RSB.

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CHAPTER 3:
PERSONAL REFLECTION

INTRODUCTION

This chapter offers a brief personal reflection on how I experienced the research process. This chapter relates specifically to what I have learned about myself, others, and the research process in general.

PERSONAL REFLECTION

Two years ago, when I was offered an intensely sought-after position in the Counselling Psychology master's class of 2017, I never imagined explaining to my highly esteemed supervising professor the mechanisms and intricacies of Tinder. However, only a few months later, that is exactly what I did. At this point in the process, I felt as though I was taking a serious risk. Prof. Botha had no idea what I was about to pitch to him, and he could easily have suggested that we go for another, more familiar route. With the initial intention of somewhat "bribing" Prof. Botha, I decided that I would also like to look at the role of self-regulation in the relationship between dating applications and risky sexual behaviour (RSB). I was very aware that he had a strong interest in self-regulation and so before I pitched my idea, I looked into self-regulation and was pleasantly surprised by how relevant it was to the topic at hand. Therefore, on the day of my pitch, I was ready to present; Tinder, RSB, and my secret weapon: self-regulation. Prof. Botha patiently and intently listened to my presentation and decided that we would be able to investigate my topic.

Everyone's face looks different when I tell them what my research is about. At this point, I feel as though I have seen just about everything. Shock, intrigue, disapproval, admiration, bemusement, and bewilderment. While in the early stages of my research, I was simultaneously attending job interviews for my internship year. At each site, the panel would ask me what I intended to investigate, and at that moment I would hold my breath in anticipation of their response. Some people laughed, some looked confused, and others exclaimed how relevant the topic was.

It is the relevance of the topic that has constantly kept me enthralled in the investigation. I vividly recall seeing a piece in the local news, in which a politician had blamed Tinder for the stark increase in sexually transmitted infection (STI) rates in Gauteng. Considering my own dating application experiences, I could not help but compare and contrast my own thoughts on dating applications with this strong negative view in the news. Having concluded the research process, I realise the impact that a negative stigma against dating applications could have on the emerging adult population. Nearly half of the study population had used a dating application at some point, and while the increases in STI and HIV rates are very real, creating a stigma against dating applications hardly seems helpful. If half of all South African young adults use dating applications – and I am fairly confident that this may soon be true – then dating applications are clearly a topic that needs to be discussed without stigma and bias.

THE PROCESS

I was the child who liked maths. Although I received very little formal training in statistics, I never imagined I would do anything other than a quantitative study. From the moment I started this journey, I knew that I wanted to investigate relationships. I wanted to have a large sample size and delve deeply into the numbers. My intention initially was to investigate causal relationships in the study; however, human nature is difficult to predict, and causal studies are difficult to conduct with regard to psychological topics. For these reasons, I happily selected an investigative process that would fulfil my desire for a quantitative study, through the investigation of relationships, but rather as correlations and effect sizes than causal relationships.

Once my initial proposal had been completed, I imagined myself nearing the data-collection process. This was an idealistic dream. The ethics approval process comprised three different ethics committees, and various application forms and documents, which ultimately took eight months to complete. This was a challenging process to comprehend, particularly as the data collection itself was scheduled to take only a week. While on my journey to ethical approval, I faced an interesting challenge, namely presenting a proposal that was written in such a way that individuals who had never heard of Tinder or other geosocial networking dating applications would be able to comprehend what I intended to do. At times throughout the ethics feedback process, I had to remind myself that some of the reviewers were genuinely unaware of how Tinder, other dating applications, Facebook, or Google Forms, work. While this was slightly frustrating, as it meant that my research was held up at times to explain these issues, it also made me aware of my readers. It became apparent that definitions, descriptions, and even examples would be imperative in order to allow the reader to truly connect with something they were not guaranteed to know about.

One of the most daunting challenges of the application process was finding a Facebook group that both met the desired demographics of the study, and, additionally, would allow the advertisement to be posted to the Facebook page, in order to reach potential participants. As a millennial, I never imagined that Facebook would be the difficult part of my study. While Facebook is filled with endless pages and groups, very few groups were sufficiently diverse to reach participants that would qualify as “South African youth”. There were pages for South African lawyers, artists, orchestras, baseball fans, the Chamber of Commerce, several university pages, etc. However, all of these pages created the problem that they targeted a specific portion of the population I intended to study, and excluded the rest of the South African youth demographic. After many days of searching, I was able to find a group that I thought would be perfect for the study. However, after several emails, Facebook calls, and even Tweets, I was unable to get in touch with any of the administrators of that page. I had to go back to Facebook and look for another page. Eventually, after a genuine and unanticipated struggle, I was able to contact a Facebook administrator of the Facebook page, “South African Youth Business Unity”, and he agreed to assist me in getting my advertisement on his page. From that moment on, the research process moved fairly quickly.

Once the study had been ethically approved, I began the data-collection process. The process ran smoothly and had me on the edge of my seat for seven days straight. I refreshed the Google Forms link obsessively

to see how many participants had taken part in the study and I was overjoyed by every new response. The week went by quickly and I was happy with the 151 responses I had received. Looking back, I would have liked to use multiple Facebook pages and other social media platforms to advertise the study, in order to receive more participant responses. However, considering the administrative headache of getting one Facebook administrator on board, I am glad that I did not attempt it the first time around.

The data collection was complete and I was shaking in anticipation of the results. I had invested so much time and energy into the study that I could not wait to see what the results indicated. For fun, I played with the data. I sat on my bed and did my best descriptive statistical analysis. I had no idea what the results of the study were at that point, but I knew they were interesting. At this point, I realised that I had decided to investigate a topic that was truly significant. Almost half of the participants had used a dating application at some point. Suddenly, dating applications were not this foreign, taboo thing anymore. Dating applications were a normal part of emerging adulthood, and I think if that was the only statistic the study showed, I would have been very excited with the results. Fortunately, however, that was simply the tip of the iceberg.

THE RESULTS

Obtaining the results of the study was an exceptionally interesting time. Each statistic felt like a unique piece of a puzzle I had spent two years building, and slowly but surely the picture was becoming clearer. Due to my limited formal training in statistics, even with the assistance of Prof. Botha and Mrs Breytenbach, I had to figure out a lot of the statistics myself. Receiving the statistical printouts of the various tests conducted by Mrs Breytenbach was therefore rather overwhelming. In fact, I fainted (a true story). However, with the help of Prof. Botha and Mrs Breytenbach, it became easier and more natural to identify patterns, trends, and significant statistics. I dusted off the Biostatistics textbook from my first year, and I started to put things together.

The results of the study suggested that individuals who make use of dating applications show far more significant correlations between self-regulation and Total RSB. This was the first piece of the puzzle I received, and already I was intrigued to know more. In addition, there were considerable effect sizes when comparing the “Ever” and “Never” groups, which showed practical significant of several variables. Having done some investigation into what exactly that meant, I realised that the differences between the “Ever” and “Never” groups were sufficiently significant that they might even be readily observable. Individuals in the “Ever” groups showed higher levels of RSB. This I had expected. What I had not expected was the lack of practical significance of self-regulation on RSB, in either group. Despite numerous studies suggesting that deficits in self-regulation were associated with RSB, self-regulation appeared to be similar between the two groups. What was also particularly interesting in the study were the large discrepancies between the male and female samples. I had already suspected that the male population would engage in higher levels of RSB; however, the significance of the differences was quite profound. This was exemplified by the regression analysis that indicated that no significant proportion of the variance of RSB could be predicted by either dating application use or self-regulation in the female population, while the regression analysis in

the male groups were far more interesting. And then we found it, decision making! Decision making could practically significantly predict variability in RSB. This simple result was the ultimate intention of the entire research study and was the final, perfectly shaped piece of the puzzle. It is my greatest hope that this small discovery will one day have real-world application and make a genuine impact on the lives of South African young adults, who so greatly need it.

THE END

Two years ago, I never would have imagined that after several long years of studying, I would hand in my master's dissertation on dating applications and RSB. It is a topic that is relatively taboo, and turned heads from the start, but it is also a topic that is exceptionally relevant, necessary, and interesting. Moreover, it is a topic that has kept me invested throughout.

Why did I decide to investigate dating applications, out of all the endless possible topics? Well, because I use Tinder. I am an emerging adult, like the participants in my study, and like almost half of them, I form part of the "Ever" group. Tinder has allowed me to meet some wonderful people, try new experiences, and go to new places. In the past, Tinder has challenged me and allowed me to step out of my comfort zone. It inspired me to learn more about myself and gave me the confidence to discuss my findings with others. At present, it has allowed me to identify a new and pivotal element in modern youth development – one that will no doubt be of significance to many people my age. To me, as strange as it might seem, Tinder is one of the reasons I was able to be accepted into the master's programme, and it is fitting that after two years of hard work, Tinder is one of the reasons I will complete my master's.

APPENDIX A: GOOGLE FORMS QUESTIONNAIRE

Biographical information

1. Gender

Mark only one circle.

- Female
- Male
- Other:

2. Age *

*The sample for this study is limited to individuals aged 18 to 24.

3. Sexual orientation*

*The sample for this study is limited to heterosexual participants.

Mark only one circle.

- Heterosexual
- Homosexual *(Skip to "Thank you for participating in this study!")*
- Bisexual: *(Skip to "Thank you for participating in this study!")*
- Other: *(Skip to "Thank you for participating in this study!")*

4. Are you a South African citizen? *

*This study is limited to South African citizens

Mark only one circle.

- Yes
- No *(Skip to "Thank you for participating in this study!")*

5. If you wish to receive the results of this study, please provide your email address:

Dating applications

6. Have you ever used a dating app?

Mark only one circle.

- Yes
- No *(Skip to question 11)*

Dating app history

7. Have you used a dating app in the last six months?

Mark only one circle.

- Yes
- No *(Skip to question 11)*

Dating app at present

8. If yes, which dating app(s) have you used or are you using?

Tick all that apply.

- Tinder
- OkCupid
- Coffee Meets Bagel
- Hinge
- Taste Buds
- Match.com
- Bumble
- Happn
- Plenty of Fish
- Meet Me
- Match dating
- Zoosk
- Other:

9. How often do you use the dating app?

Mark only one circle.

- Every day
- A few times a week
- Once a week
- Once every few weeks
- Once a month
- Once every few months
- Once a year
- Other:

Short Self-Regulation Questionnaire

Developed by Carey, Neal, and Collins (2004)

10. Choose the appropriate response, Strongly Disagree to Strongly Agree, for each statement.

1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

Mark only one circle per row.

- o I usually keep track of my progress toward my goals.
- o I have trouble making up my mind about things.
- o I get easily distracted from my plans.
- o I do not notice the effects of my actions until it is too late.
- o I am able to accomplish goals I set for myself.
- o I put off making decisions.
- o It is hard for me to notice when I have “had enough” (alcohol, food, sweets).
- o If I wanted to change, I am confident that I could do it.
- o When it comes to deciding about a change, I feel overwhelmed by the choices.
- o I have trouble following through with things once I have made up my mind to do something.
- o I do not seem to learn from my mistakes.
- o I can stick to a plan that is working well.
- o I usually only have to make a mistake one time in order to learn from it.
- o I have personal standards, and try to live up to them.
- o As soon as I see a problem or challenge, I start looking for possible solutions.
- o I have a hard time setting goals for myself.
- o I have a lot of willpower.
- o When I am trying to change something, I pay a lot of attention to how I am doing.
- o I have trouble making plans to help me reach my goals.
- o I am able to resist temptation.
- o I set goals for myself and keep track of my progress.
- o Most of the time I do not pay attention to what I am doing.
- o I tend to keep doing the same thing, even when it does not work.
- o I can usually find several different possibilities when I want to change something.
- o Once I have a goal, I can usually plan how to reach it.
- o If I make a resolution to change something, I pay a lot of attention to how I am doing.
- o Often I do not notice what I am doing until someone calls it to my attention.
- o I usually think before I act.
- o I learn from my mistakes.
- o I know how I want to be.
- o I give up quickly.

Sexual Risk Survey

Adapted from the version developed by Turchik and Garske (2009)

Please read the following statements and record the number that is true for you over the past six months for each question on the blank. If you do not know for sure how many times a behaviour took place, try to estimate as closely as you can.

If you have had multiple partners, try to think about how long you were with each partner, the number of sexual encounters you had with each, and try to get an accurate estimate of the total number of each behaviour.

In the following questions:

SEX includes oral, anal, and vaginal sex

SEXUAL BEHAVIOUR includes passionate kissing, making out, fondling, petting, oral-to-anal stimulation, and hand-to-genital stimulation.

Please consider only the last six months when answering.

Please answer the following questions as truthfully as possible.

11. In the following questions, consider the frequency of various behaviours.

1 = NEVER, 2 = SELDOM, 3 = OFTEN, 4 = VERY OFTEN

Mark only one circle per row.

- How many times have you left a social event with someone you have just met?
- How many times have you "hooked up" but not had sex with someone you did not know or did not know well?
- How many times have you gone out to bars / parties / social events with the intent of "hooking up" and engaging in sexual behaviour but not having sex with someone?
- How many times have you gone out to bars / parties / social events with the intent of "hooking up" and having sex with someone?
- How many times have you had an unexpected and unanticipated sexual experience?
- How many times have you had a sexual encounter you engaged in willingly but later regretted?
- How many times have you had vaginal intercourse without a latex or polyurethane condom? Note: include times when you have used a lambskin or membrane condom.
- How many times have you had vaginal intercourse without protection against pregnancy?
- How many times have you given or received fellatio (oral sex on a man) without a condom?
- How many times have you given or received cunnilingus (oral sex on a woman) without a dental dam or "adequate protection"?
- How many times have you had anal sex without a condom?
- How many times have you or your partner engaged in anal penetration by a hand ("fisting") or other object without a latex glove or condom, followed by unprotected anal sex?

- How many times have you given or received analingus (oral stimulation of the anal region, “rimming”) without a dental dam or “adequate protection”?
- How many times have you had sex with someone you do not know well or have just met?
- How many times have you or your partner used alcohol or drugs before or during sex?
- How many times have you had sex with a new partner before discussing sexual history, intravenous (IV) drug use, disease status, and other current sexual partners?
- How many times (that you know of) have you had sex with someone who has had many sexual partners?
- How many times (that you know of) have you had sex with someone who was also engaging in sex with others during the same time period?

12. In the following questions, consider the quantity of various behaviours.

1 = NONE, 2 = VERY FEW, 3 = SOME, 4 = SEVERAL

Mark only one circle per row.

- How many partners have you engaged in sexual behaviour with but not had sex with?
- How many partners have you had sex with?
- How many people have you had sex with that you know but are not involved in any sort of relationship with (i.e. “friends with benefits” or “fuck buddies”)?
- How many partners (that you know of) have you had sex with who had been sexually active before you were with them but had not been tested for STIs/HIV?
- How many partners have you had sex with who you did not trust?

Thank you for participating in this study!