Cognitive executive functioning and self-compassion of municipal employees in South Africa

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Preface and Acknowledgements

As a counsellor I have witnessed how so many of my clients suffer as a result of harsh self-criticism and judgement. It was only after my personal encounter with self-compassion and how it contributed to the improvement of my well-being, that I became aware of the promise it holds for self-acceptance, wellbeing, a new way of relating to the self and of embracing life. Self-compassion is that internal gentle companion that welcomes one with unconditional kindness, acceptance and love when life is painful and filled with obstacles.

The context sketched above became the steppingstone for this study, and it is my hope that this study will be another steppingstone for so many others.

This study was not only an academic journey, but also a personal one, and I am sincerely grateful to all who unknowingly accompanied me on this journey. I would like to convey a special word of thanks to the following people:

- Prof. Chrizanne van Eeden, my sincere appreciation for your patience, encouragement, wisdom, knowledge and guidance. Your conscientiousness and thoroughness are reflected in this study and I am deeply grateful.
- Denise King, thank you for giving me a treasured lifelong gift, you introduced me to self-compassion and mindfulness.
- My family, friends and colleagues, your support and understanding during this journey were meaningful and valued, I thank you from an indebted humble heart.
- Elizabeth Bothma, thank you for all your hard work with the statistical analysis of the data;
- To all the participants, you made this study possible. I sincerely thank you for your participation and interest in this study.

Summary

This study explored the relationship between self-compassion and selected cognitive executive functions. A brief summary of the three chapters are presented below.

Chapter 1 comprises of the literature study that presents an overview of the theoretical understandings and underpinnings of both self-compassion and selected executive functions. From the literature study emerged a research question: could profiles of self-compassion be identified in participants by means of latent profile analysis (LPA), and would dimensions of executive functions predict profile membership of the self-compassion profiles? Chapter 1 further described the research methodology which included the research design, participants and procedures, data collection, data analysis, ethical considerations and lastly an outline of the chapters of the study.

Chapter 2 contains the research article and is composed of a brief literature background of self-compassion and executive functions, the research method, results and a discussion of the results. The findings of the study are that four self-compassion profiles were identified by means of LPA namely, low, moderate, high and thriving self-compassion profiles. This study also indicated that the executive functions of motivational drive, organisation and strategic planning predicted membership of self-compassion profiles.

Chapter 3 is the concluding chapter and comprises of the theoretical and empirical conclusions, followed by the limitations and recommendations. The research question was convincingly answered, and the aims of the study were met. Four latent self-compassion profiles were identified, and profile membership was significantly predicted by organisation and strategic planning to a lesser extent by motivational drive and not at all by empathy and impulse control.

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To whom it may concern

I hereby declare that I language-edited the content of the dissertation "Cognitive executive functioning and self-compassion of municipal employees in South Africa" by Davina Jacobs. I am an accredited editor with the South African Translators' Institute (SATI Member No.: 1000193).

Yours sincerely

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Declaration

I, Davina Frances Jacobs declare that "Cognitive executive functioning and self-compassion of municipal employees in South Africa" is my own original work and that the views and opinions expressed in this work are those of the author and based on relevant literature references as shown in the reference list.

I further declare that the content of this research will not be submitted for any other qualification(s) at any other institution.

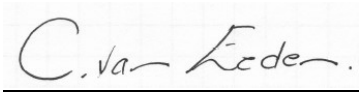
10 November 2019

Author

Davina Frances Jacobs

Permission to Submit

I, Professor Chrizanne van Eeden hereby give permission to Davina Frances Jacobs to submit this document as a mini-dissertation for the qualification MA in Positive Psychology. Furthermore, I confirm that this mini-dissertation has been written in the article format that is in line with the 2019 General Academic Rules (4.4.2 and 4.10.5) of the North West University.



13 November 2019

Supervisor

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CHAPTER 1

STUDY TITLE: COGNITIVE EXECUTIVE FUNCTIONING AND SELF-COMPASSION OF MUNICIPAL EMPLOYEES IN SOUTH AFRICA

Keywords: common humanity, empathy, executive function, inhibition, mindfulness, motivational drive, organisation, self-compassion, self-kindness, strategic planning

This study explored the relationship between self-related functions such as self-compassion and selected cognitive executive functions. People live and work in fast-paced environments that demand a great deal physically, emotionally, and psychologically. This is not going to change; therefore, ways of becoming more resilient to keep up with the demands with which we are faced in all spheres of everyday life need to be devised. Self-compassion has emerged in research as a resource to build resilience (Neff & Pommier, 2013), and individuals also have inner cognitive resources, known as executive functions, that are cognitive processes and skills enabling them to function in the everyday environment (Diamond, 2016).

Research during the past decade regarding self-compassion has contributed to the emergence of this construct and to an understanding of the beneficial contributions that it makes to well-being (Neff, 2009). Self-compassion can be described as having a compassionate, humane, and considerate understanding towards oneself (Muris & Petrocchi, 2016). During times when faced with one's own suffering, fragility, or imperfection, self-compassion requires an understanding towards the self that is kind, non-judgemental, and less self-critical, while recognising that one is part of humanity and that the challenges, suffering, stress, and doubt are all part of humanness (Neff, 2003a). Well-being, happiness, life satisfaction, emotional intelligence, and adaptive coping strategies are all positively associated with self-compassion (Neely, Schallert, Mohammed, Roberts, & Chen, 2009; Neff, Rude, & Kirkpatrick, 2007; Neff, Ya-Ping, & Dejitterat, 2005), whereas cognitive patterns such as rumination, avoidance, and thought suppression correlate negatively (Neff, 2003b).

Executive functions are a body of neurologically based skills that enable an individual to manage himself/herself and his/her available inner resources effectively in order to attain an objective or an intention through the use and management of cognitive functions such as inhibition, shift, emotional control, initiation, working memory, planning and organisation, self-monitoring, communication, and accountability (Roth, Lance, Isquith, Fischer, & Giancola, 2013). Executive functions can be enhanced and, in doing so, benefit self-esteem,

academic performance (Best, Miller, & Naglieri, 2011), career development, and advancement and buffer against disabling emotional disorders such as depression and anxiety (Diamond, 2016).

A problem statement as motivation for this research is discussed below.

Problem Statement

The value of self-compassion and executive functions in our daily functioning has been researched by a number of studies, which reported positive associations between self-compassion and executive functions (Martin, Staggers, & Anderson, 2011; Shin, Black, Shonkoff, Riggs, & Pentz, 2016). Furthermore, these indicated that mindfulness as a self-compassion construct showed a positive correlation with the main elements of executive functions. Diamond and Lee (2011), for example, reported that mindfulness training improved executive functions in children. Teper, Segal, and Inzlicht (2013) found that mindfulness cultivated executive control, leading to improved emotion regulation, while Holas and Jankowski (2013) examined the cognitive aspects of mindfulness and reported that mindfulness was dependent on executive functions and other attentional processes. Studies with regard to the relationship between the self-kindness feature of self-compassion and executive functions are scant, but Flook, Goldberg, Pinger, and Davidson (2015) did a 12-week mindfulness-based kindness curriculum intervention with preschool children, and the results showed an improvement in executive functions, especially cognitive flexibility. There also appears to be a gap in the research with regard to the common humanity component of self-compassion and executive functions (Neff, 2003c).

Most of the correlational studies reporting on self-compassion and its role in psychological well-being and executive functions used the total self-compassion score and often neglected to investigate the individual subscale scores for self-kindness, common humanity, and mindfulness and how significant their correlations were with other constructs being assessed (Neff, Whittaker, & Karl, 2017). In an electronic search about the individual

components of the self-compassion scale as described by Neff (2003a), namely, self-kindness, common humanity, and mindfulness, no results with regard to the common humanity subcomponent were found; yet it is one of the primary components of self-compassion. As mentioned, there are studies reporting on self-compassion as a whole, but to a lesser extent exploring the positive subcomponents of self-compassion (apart from mindfulness) and their relationship with well-being, executive functions, and an array of psychosocial variables. Therefore, examining the individual components of self-compassion can contribute to an understanding of those self-compassion aspects that are most significantly associated with other constructs. Furthermore, research on self-compassion in South Africa is limited. A study by Kirsten and Du Plessis (2013) explored self-compassion with regard to eating disorders, and Whitesman and Mash (2015) did a study to evaluate the effectiveness of a nine-week mindfulness-based intervention, in which self-compassion was one of the outcomes.

The paucity of research on executive functioning and self-compassion, in general and in South Africa, raised a question about the relationship between the two constructs as assessed in a South African context. The literature background to the research is described below.

Literature Background to the Study

The literature study followed the same basic outline for both self-compassion and executive functions, in which each component and the corresponding subcomponents were examined using the following primary aspects:

- Conceptualisation
- Development and corresponding brain region
- Strengths and benefits associated with the optimal and healthy functioning and presence of the component or subcomponent
- Negative consequences when the component or subcomponent is lacking

Executive functions

Conceptualization of executive functions

Anderson (2002) describes the executive function construct as numerous cognitive processes containing the core elements of anticipation, planning, goal selection, initiation of activity, self-regulation, mental flexibility, deployment of attention, and utilisation of feedback. According to Banich (2009), executive function is a complex and multifaceted operation that enables an individual to direct his/her behaviour towards the attainment of an objective by employing various cognitive skills such as prioritisation, inhibition, working memory, shifting, and organisation. In addition, these skills facilitate the competence of distinguishing between relevant and irrelevant information related to the desired goal, and consequently, the individual is able to employ information that is favourable to the desired outcome. Barkley (2014) views executive functions as actions that an individual takes to enable him/her to change an outcome of an identified goal, while Dawson and Guare (2010) state that executive skills make it possible for an individual to alter his/her behaviour and opt for reaching a future goal instead of satisfying an immediate insistence. Vriezen and Pigott (2002) also see executive function as a multifaceted construct that includes advanced cognitive processes to manage various behavioural, emotional, and cognitive operations; in a similar vein, (Miyake & Friedman, 2012) view executive functions as a common management system that monitors and controls individual cognitive functions and coupled responses and actions. Gioia and Isquith (2004) describe executive functions as discrete, yet interrelated, competency skills that facilitate wilful, targeted, and solution-oriented responses and reactions. In more recent research, Diamond (2016) states that executive functions are multiple expertise functions that operate when automated and that instinctive reactions will not suffice; deliberate and focused attention is called for. Clearly, a variety of conceptualisations of executive functions exist, making it a challenge to present a comprehensive and decisive definition. It would disadvantage the construct to do so; therefore, it seems wiser to understand the term

"executive functions" as follows: a rich generic and collective construct that houses a diverse group of interrelated cognitive, behavioural, and emotional processes; integrated in our everyday lives; applied and utilised continually in non-routine circumstances and situations; and directing and managing our behaviour towards the accomplishment of a targeted goal (Dawson & Guare, 2010; Diamond, 2016; Gioia & Isquith, 2004; Vriezen & Pigott, 2002).

How executive functions develop

The development of executive functions starts within the first six months of an infant's life, and working memory is the first skill to emerge (Garon, Bryson, & Smith, 2008). By the age of six years, working memory has developed adequately, but continues to improve into adolescence (Best & Miller, 2010). Inhibition starts to develop between six and 12 months (Garon et al., 2008), and its development increases speedily between the ages of three and five years, before stabilising after the age of eight (Best & Miller, 2010). Interestingly, Moffitta et al. (2011) reported that the level of inhibitory control in childhood could be predictive of physical and financial well-being, as well as substance abuse and criminal behaviour, in later life. By the age of 15 months, a child is able to co-ordinate, update, and manage information and, around the age of two, develops the skill to integrate working memory and response inhibition (Garon et al., 2008). Cognitive flexibility is dependent on inhibition and working memory and, therefore, is the last of the primary executive functions to develop at around three to four years old; it continues to improve into adolescence and matures around the age of 15 (Best & Miller, 2010). The development of executive functions is prolonged, starting from as young as six months (Garon et al., 2008), and continues into adulthood, with deterioration appearing in the region of 70 years of age (Best, Miller, & Jones, 2009). Encouragingly, executive functions can be improved at any age, even in the elderly (Diamond, 2013).

The anatomy of executive functions

Anatomically, executive functions are primarily affiliated with the prefrontal cortex (PFC) (Miller & Cohen, 2001), which can be further divided into distinguishable areas, namely, the dorsolateral, medial frontal, and orbitofrontal (Otero & Barker, 2014). The dorsolateral prefrontal cortex is linked to cognitive aspects of executive functioning such as working memory, planning, and problem solving, whereas affective executive functioning aspects that are regarded as emotional or motivational are linked to the orbitofrontal cortex and the medial frontal cortex (Otero & Barker, 2014). Leh, Petrides, and Strafella (2010) highlight that executive functions are not solely associated with the PFC, but that subcortical circuitries are engaged as well, while Otero and Barker (2014) similarly emphasise that the areas of the brain do not function independently, but rather as an integrated and intricate system. Another important aspect of which one needs to take cognisance is that executive functions are not the only functions connected to the PFC. Stuss (2011) identifies four functional categories associated with the frontal lobe area: energisation, emotional/behavioural regulation, metacognition, and the executive.

Multidimensional nature of executive functions

In addition to the multiple conceptualisations of executive functions, there is a continuing scholarly debate whether executive functions should be seen as a unitary or multidimensional construct. Miyake and Friedman (2012) posit that executive functions consist of divisible cognitive workings and mechanisms that are not solely independent, but often work in a linked and complementary manner. Similarly, Gioia and Isquith (2004) see executive functions as a group of reciprocal functions, rather than an independent, undivided function. Most executive-function authors agree that there are three core domains of executive functions, namely, inhibition, working memory, and cognitive flexibility (Diamond, 2013; Miyake & Friedman, 2012; Miyake et al., 2000), and that these can be further divided into

subdomains of executive processes and functions (Gioia, Isquith, Kenworthy, & Barton, 2002). The most common subdomains are as follows:

- *Initiation of behaviour* refers to the autonomous starting of an activity or objective without unnecessary delay (Dawson & Guare, 2009).
- *Inhibitory control* is the ability to regulate attention, impulses, and notions fittingly, instead of being at their mercy and thereby letting them control one's emotional, behavioural, and physical reactions and responses (Diamond, 2013).
- *Shift* refers to the cognitive ability to adapt and be flexible as circumstances or conditions demand, for example, considering another perspective or thinking creatively out of the box (Diamond, 2013).
- *Self-monitoring* is being able to assess how one's own behaviour or reactions affect or have an impact on others (Roth et al., 2013).
- The subdomain of *planning and organising* refers to the competence to set appropriate goals and to systematically plan and prepare how these targeted goals will be achieved (Dawson & Guare, 2009).
- *Task monitoring* is the ability to evaluate and oversee thoughts, emotions, and behaviour in line with the directed goal or task at hand (Roth et al., 2013).
- *Emotional control* refers to the ability to regulate one's emotional reactions and responses aptly to achieve desired goals and objectives and manage one's behaviour (Dawson & Guare, 2009).
- *Working memory* is defined as the ability to contain information, control it, and use it when necessary to achieve a goal or accomplish a task (Diamond, 2013).
- *Organisation of materials* refers to the skill to group, sort, and position materials and requirements in an orderly manner that will facilitate the completion of a task effectively (Roth et al., 2013).

Psychological dimensions of executive functions

Adding to the wide array of executive functions, Spinella (2005) includes *empathy* to indicate the degree of an individual's prosocial behaviour and attentiveness to the welfare of others, as well as a *motivational drive* aspect to reflect the inspiration, drive, and curiosity involved in new and different activities. Recognising that executive functions are not solely functional cognitive skills, but that emotions and motivations play an important role in one's everyday functioning (Zelazo & Carlson, 2012), executive functions can be categorised as metacognitive/intellectual and emotional/motivational as well (Ardila, 2018). Even anatomically different brain regions are involved with the dorsolateral prefrontal area regarding metacognitive executive functions and the orbitofrontal and medial frontal regions regarding emotional/motivational executive functions (Ardila, 2008). Metacognitive executive functions are described as functional and include executive functions such as working memory, planning, problem solving, attention, and strategic development, while emotional/motivational executive functions are tasked with the responsibility of integrating and regulating cognition and emotions; in this regard, the executive function of inhibitory control is at the core (Ardila, 2018). Gioia, Isquith, Guy, and Kenworthy (2000) distinguish between behavioural and metacognitive components in their Behaviour Rating Inventory of Executive Function.

Due to the motivational and emotional features in executive functions, an additional distinction is made between cool and hot executive functions (Zelazo & Cunningham, 2007). The cool aspects of executive functions are purely functional and cognitive as well as being neutral with regard to emotional and motivational factors; in contrast, hot executive functions are sensitive to affective and motivational impulses (Zelazo & Carlson, 2012). Similar to the metacognitive and emotional/motivational categorisation of executive functions, cool executive functions are linked to the lateral prefrontal cortex and hot executive functions to the orbitofrontal cortex and medial areas (Zelazo & Carlson, 2012). The development of hot

executive functions is more prolonged than that of cool executive functions, which could possibly explain why children and adolescents do not yet grasp the negative outcomes of choices they make in everyday situations that are emotionally and motivationally charged (Zelazo & Carlson, 2012).

The broad inclusion of functions under the umbrella of executive functions is important in one's everyday functioning, as these functions contribute to physical and mental well-being, school and career success and advancement, and interpersonal relationships and is even related to fewer social problems in society (Diamond, 2013). Weakly developed executive functions are related to unhealthy lifestyle choices with regard to healthy eating and physical exercise (McAuley et al., 2011) and to substance abuse (Pentz, Riggs, & Warren, 2016). Another important factor is that executive functions sometimes pose challenges in operating optimally and in accord with one another and can become depleted, which, in turn, can contribute to the development of psychological illness symptoms or have a negative impact on how we cope with life and everyday routine tasks, as well as on behaviour and emotions (Snyder, Miyake, & Hankin, 2015).

Primary components of executive function

In this study, empathy, organisation, impulse control, strategic planning, and motivational drive as executive function dimensions were investigated in relation to aspects of self-compassion. Each of the primary aspects will be discussed in more detail below.

Empathy

Spinella (2005) defines empathy as a disposition that enables one to share and understand the emotional experiences of others. Similarly, Corradini and Antonietti (2013) describe empathy as a complex construct that can be conceptualised as an individual's ability to resonate with what another person is experiencing with regard to his/her mental, emotional, and sentimental states, inclusive of his/her thinking, convictions, opinions, hopes, and aspirations, which, in turn, enables the observer individual to understand the motivation and reasoning behind the

other person's behaviour. Tousignant, Eugène, and Jackson (2017) describe empathy as consisting of five primary elements:

- A bottom-up spontaneous and instinctive process that enables one to share in the emotional experience of others
- The potential to distinguish between one's own emotions and the emotions of others
- The competence to mentally place oneself in the position of another with the intent to understand the emotions and the other person's frame of reference – a top-down cognitive process
- Controlling one's own emotions to facilitate a suitable empathic reply or reaction (affective empathy)
- As a result of the interrelationship between the four aspects above, a benevolent inner drive emerges to improve the well-being of others.

Cognitive, affective, and behavioural components are identified in empathy, resulting in unidimensional or multidimensional approaches. Where unidimensional approaches focus on a single component – either cognitive or affective – a multidimensional approach will be comprised of both affective and cognitive components (McCreary, Marchant, & Davis, 2018, April).

Empathy evolves from the young age of approximately six months and advances in development into adulthood. According to Decety (2015), empathy is the foundation for social synergy and is essential for morality, as it enables an individual to grasp the negative consequences of inflicting pain or harm on others. Affective empathy is manifested early in a child's development; however, cognitive empathy emerges later, from around the age of four to five years (Decety, Meidenbauer, & Cowell, 2018). According to Decety (2010), cognitive empathy is linked to executive function and self-regulation and compels the observer to mentally project himself/herself as being in the shoes of another, thus taking an objective

perspective. Such a perspective, in turn, depends on cognitive flexibility (Johnstone, Cohen, Bryant, Glass, & Christ, 2015), and as stated earlier, cognitive flexibility inherently depends on working memory and inhibition (Best & Miller, 2010).

Biological, social, cultural, and environmental factors, especially parenting, influence the development of empathy in an individual's life (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008; McDonald & Messinger, 2011). Harsh, aggressive, and unsupportive parenting during childhood significantly undermines the healthy development and expression of empathy (Gordon, 2003). Empathy is of primary importance for healthy social functioning, while its lack impairs moral decision-making. It may be a precursor to cognitive and social disturbances, especially in psychopathy, and feeds apathy and indifference with regard to acceptable moral conduct (Decety & Cowell, 2018). Ritter et al. (2011) observed that weak emotional empathy, but intact cognitive empathy, was present in individuals diagnosed with narcissistic personality disorder, and Sterzer, Stadler, Poustka, and Kleinschmidt (2007) reported that adolescents with conduct disorder showed a lack of empathy.

Johnstone et al. (2015) found that empathy was linked to right parietal lobe activity, while according to Corradini and Antonietti (2013), behavioural sharing, including empathy, has its roots in mirror neurons, more precisely the mirror neuron activity in the inferior parietal cortex. King, Breen, Russell, Nerpel, and Pogalz (2018) state that damage or trauma to the orbitofrontal and ventromedial brain areas could possibly undermine empathy.

There is no clear consensus regarding the relationship between self-compassion and empathy. Neff (2003b) remarks that self-compassion and concern for others are kindred, while Welp and Brown (2014) postulate that self-compassion is a significant predictor of an individual's willingness to assist others in distress, but that individuals high in self-compassion do not naturally show more empathy to others in distress. These authors attribute this unique variance between self-compassion and empathy to the observer's perspective and

evaluation of the situation or context. Should the observer feel that the target is responsible for his/her own predicament, the observer may experience less empathy and be less inclined to help.

Fuochi, Veneziani, and Voci (2018) found that the common humanity component of self-compassion correlated positively with empathic concern, and the authors are of the view that, due to the affinity between the self and others found in the common humanity aspect of self-compassion, this could play a role in empathy towards others. Similarly, Johnstone et al. (2015) found that empathy required a healthy and balanced sense of self. Developing a growth-oriented mindset can assist in improving a lack of empathy; therefore, interventions aimed at helping individuals grasp that a lack of empathy can be altered by acknowledging and accepting that failure regarding one's inadequacies creates a space for improvement and growth (Schumann, Zaki, & Dweck, 2014). This requires individuals to reassess and adapt previous perceptions and beliefs regarding empathy and its expression. By adopting a growth mindset, individuals may be more motivated to change their preconceived notions about being empathic and, subsequently, improve their lack of empathy.

Motivational drive

Motivation is described as a non-observable cognitive process that unfolds within the synergy between the individual and his/her situation, context, or environment, relating to the domain of goal-directed behaviour (Cook & Artino Jr, 2016). Motivation is a term primarily coupled with two types of behaviour, namely, approach or avoidance, where approach motivation, on the one hand, is fuelled by the lure or attractiveness of a situation, and avoidance motivation, on the other, is charged by negative valence or the unpleasantness of a situation (Elliot, 2013).

Motivation can, furthermore, be conceptualised as an energising and influential force that has an impact on one's behaviour and cognitive control, playing a crucial role in the selection of goals, depending on their possible outcome, that can either reward or punish

(Botvinick & Braver, 2015). Motivation either shunts or sharpens cognitive processes to increase the probability of obtaining a reward, improve performance, or avoid negative consequences (Pessoa, 2009).

Motivation does not develop in isolation, but is instead closely linked to emotion, and emotion is instrumental in directing cognition optimally, while taking all the current contextual and situational factors into consideration (Wager & Barrett, 2011). Harmon-Jones, Gable, and Price (2013) discovered that positive emotional moods that were reserved in motivational drive (such as enjoyment or pleasure) contributed to cognitive expansion, whereas negative emotional moods (such as fear or mild angst) were high in motivational drive and restricted cognitive outlook, which could possibly assist in goal achievement. According to Inzlicht, Bartholow, and Hirsh (2015), cognitive control launches when there is an interference with current goals that arouses negative affect. It is, therefore, the negative affect that makes one aware of discrepancies that might influence goal achievement at the risk of goals not being met. Pertaining to positive emotions, Sherdell, Waugh, and Gotlib (2012) distinguish between wanting and liking a reward, where wanting a reward points to the anticipation of reward in the future, and liking a reward implies enjoyment and gratification in the moment. The authors found that, when positive affect was not operative with regard to the anticipation of reward, appetitive motivation declined, and the individual was less motivated to pursue the identified goal.

Remaining motivated can be related to the inherent cost of cognitive control, as the possible rewards are weighed against the cognitive cost (Botvinick & Braver, 2015). Cognitive exertion and motivation operate side by side, where motivation decreases when the subjective cognitive costs exceed the anticipated value of the incentive, but when the anticipated value of the incentive is high, motivation increases, and correspondingly, cognitive resources are allocated to goal-directed behaviour (Yee & Braver, 2018). Kim (2013) offers an alternative viewpoint and suggests that current rewards are preferred to

future rewards. When gratification is delayed, the reward becomes less important, and motivation to achieve goals or objectives decreases.

Apart from emotion, there are other elements that influence one's motivational drive. Heckhausen (2012) is of the view that, firstly, motivation is influenced by an individual's abiding personality traits that are unconscious and reflect personal preferences pertaining to preferred incentives. Secondly, situational factors can present the individual with either challenges or scope and freedom with regard to goal achievement. These aspects do not modulate motivation independently, but rather as a combined and co-ordinated influential system.

Gee et al. (2018) posit that traumatic childhood experiences can influence the development of the integrated brain circuits in the prefrontal subcortical region that underpin the development of motivation, and subsequently, the individual becomes more vulnerable to impaired threat and reward responding. Callaghan and Tottenham (2016) state that childhood stress and trauma can play a significant role in the neurological and behavioural development underlying apathy and aloofness, which, in turn, impedes the normal and healthy development of reward and threat motivation.

Apart from situational and socio-environmental factors, various research studies emphasise dopamine (DA) and the important role it plays in motivational drive (Berke, 2018; Westbrook & Braver, 2016; Westbrook & Frank, 2018). Boekhoudt et al. (2018) indicate that the dopamine system in the brain can be partly responsible for low or diminished motivation, and the authors suggest that motivation may be improved by enhancing the DA communication in the nucleus accumbens in the brain. The function of the dopamine receptors in the nucleus accumbens may be improved through the practice of mindfulness meditation and may, subsequently, contribute to increased motivation, enthusiasm, and positive emotions (Norris & Hutchinson, 2018).

The medial prefrontal cortex, specifically the anterior cingulate cortex, is involved in the cognitive assessment of possible consequences such as reward, punishment, and risk in goal pursuit and achievement (Kim, 2013; Kouneiher, Charron, & Koechlin, 2009).

Strategic planning

Planning is a higher-order metacognitive skill and a fundamental aspect of executive functions; it assists an individual to strategically determine the steps and arrange them sequentially in the most efficient manner to complete a novel task, reach a goal, or solve a problem (Miller, Botvinick, & Brody, 2017; Pennequin, Sorel, & Mainguy, 2010; Rabinovici, Stephens, & Possin, 2015). Furthermore, planning enables one to establish what resources are required, how time must be allocated, and how all related factors need to be organised to achieve the identified objective (Meltzer & Krishnan, 2007). Kofman, Gidley Larson, and Mostofsky (2008), in their understanding of strategic planning, similarly identify factors that form part of the planning process, such as breaking down the whole into parts, arranging all planning elements into a logical process, having the ability to foresee what the possible outcome might be, and then implementing the plan.

Pennequin, Sorel, and Fontaine (2010) reported that planning was not directly linked to age; rather, it was influenced by the level of advancement of basic foundational executive functions such as working memory and inhibition. They found that children younger than seven years employed inhibition to plan and act aptly, while inhibition specifically enabled a child to constrain inappropriate interferences and allowed working memory and cognitive flexibility to progress, enabling an individual to solve novel and complicated issues. Albert and Steinberg (2011) found that strategic planning skills continued to develop into late adolescence and early adulthood, corresponding to the protracted development of brain structures and cognitive processing abilities. The authors also emphasise the value of working memory and inhibition, specifically narrowing the mediating aspects to working memory capacity and not working memory updating. Pertaining to inhibition, it is not only the control

of distracting stimuli that is important in contributing to thorough planning, but also and even rather the ability to inhibit responding too hastily in solving a problem.

There is no clearly identified brain region associated with cognitive planning (Nitschke, Köstering, Finkel, Weiller, & Kaller, 2017). In many studies, planning is associated with the prefrontal cortex (Miller & Cohen, 2001). Buckner (2010) identifies the hippocampus as an important brain structure in planning and states that this area of the brain enables an individual to envisage what may unfold or occur in the future by recalling and learning from past events. Likewise, the default mode network (DMN) is instrumental in being able to imagine future events, and this function is in operation during periods of cognitive rest (Schacter et al., 2012). The integrated brain areas in the DMN are the ventral medial prefrontal cortex, posterior cingulate cortex, inferior parietal lobe, lateral temporal cortex, dorsal medial prefrontal cortex, and hippocampus (Buckner, Andrews-Hanna, & Schacter, 2008). In the discussion to follow regarding organisation, the DMN will be explained in more detail.

Many researchers and authors examining executive functions have reported on planning and organisation as a combined construct, with the elements functioning complementarily (Dawson & Guare, 2009; Gioia et al., 2000). Therefore, the following description of organisation can also be understood as an extension of the planning component of executive functions.

Organisation

Meltzer and Krishnan (2007) describe organisation as a fundamental executive function skill that is utilised in miscellaneous daily living tasks and academic undertakings, enabling one to orderly arrange various forms of information to reach a goal. Similarly, the developer of the Executive Function Index (Spinella, 2005) describes organisation as a multifaceted concept that incorporates various aspects such as the juggling or balancing of task arrangements and the classification of information in one's mind to enable decision-making. Abikoff and

Gallagher (2008) developed the Children's Organisational Skills Scale with the purpose of evaluating how children arranged their time, resources, and actions in order to execute and complete a given task. The authors found that children who had organisational skill difficulties, notably children diagnosed with ADHD, found it challenging to strategise how a task could be completed and how to track task progress. Poor organisational skills can be recognised when individuals, especially children, misplace items, are unsettled and disorganised relating to elements and items needed to complete a task, forget to complete and submit assignments, fail to remember completion and submission dates, struggle with time management, and often stall or prolong the completion of tasks. Inattention and absent-mindedness are also often observed in individuals who struggle with organisational skills (Abikoff et al., 2013). Organisational skills develop between the ages of seven and 10 and progress into adolescence, on par with strategic and rational thinking (Anderson, Anderson, & Lajoie, 1996).

Kofler et al. (2018) found that organisational skills challenges in individuals diagnosed with ADHD might not necessarily be attributed to an inadequacy or shortcoming in knowledge skills; instead, the block or interference could be in applying the knowledge at the right time and in the most appropriate way. This, in turn, rather suggests compromised working memory, as working memory processes that are impeded could make it challenging to plan and organise all related functions and resources with the aim of completing a task. In the light of this understanding of the executive function of organisation, it may prove beneficial to have a look at studies that investigated working memory and related aspects that might impede its functioning as well as other studies that might shed light on how working memory can be improved. McVay and Kane (2009) observed that individuals with lower working memory capacity tended to mind-wander more frequently than individuals with higher working memory capacity when required to focus on a task, and Mason et al. (2007) found that there was a correlation between mind-wandering and the DMN, mentioned earlier,

in the brain. This default mode network is a group of brain regions, specifically the posterior cingulate cortex and anterior cingulate cortex, that are active during periods of rest and are deactivated when cognitive action is required (Greicius, Srivastava, Reiss, & Menon, 2004). Xin and Lei (2015) found that activity in the DMN lessened when working memory was in operation during the execution of tasks and that top-down stimuli that were triggered in the prefrontal cortex assisted in reducing activity in the DMN, which, in turn, promoted improved empathy and working memory associated with an individual's social functioning. In another study done by Anticevic et al. (2012), a correlation between the suppression of activity in the DMN and cognitive achievement was suggested, and the authors found that cognitive execution and achievement improved when DMN activity was suppressed.

The studies mentioned above indicate that strong activity in the DMN can hinder focused attention and interfere with working memory, which leads one to ask how working memory interference can be limited. Greenberg et al. (2019) propose that mindfulness training may limit interference that is associated with diminished working memory and that, in turn, corresponds to increased hippocampal volume. Garrison, Zeffiro, Scheinost, Constable, and Brewer (2015) found decreased DMN action during periods of meditation, while another study found that the working memory capacity of individuals who practised mindfulness meditation for a period increased strongly (Quach, Mano, & Alexander, 2016). There are various other studies that have delivered promising support for mindfulness meditation as an intervention to limit mind-wandering and rumination – both aspects that appear to interfere with cognitive organisational skills (Deyo, Wilson, Ong, & Koopman, 2009; Mrazek, Smallwood, & Schooler, 2012; Rahl, Lindsay, Pacilio, Brown, & Creswell, 2017; Wolkin, 2015).

Impulse control

Diamond and Ling (2016) view inhibition as the ability to withhold one's first original notion or instinctual response and consider responding in the most appropriate manner with

forethought to relevant contextual elements. Inhibition is realising that one is neither enslaved by subjective or foreign impulses, nor automatic habitual thinking or impulsivity that involuntarily drives one into responding and behaving in a manner that is not beneficial for goal pursuit, task progress, and completion; one should rather become aware that one can choose how to respond and behave. Dawson and Guare (2009) highlight another element of this construct, namely, that response inhibition allows one the time to assess what is happening and what is required in responding to the current situation. The majority of authors who have examined impulse control, also called inhibition or inhibitory control, are in agreement that the primary function of this executive skill is to stifle prepotent, hasty, and impulsive responses that do not aid or serve goal pursuit, progress, or achievement (Miley & Spinella, 2006; Pessoa, Padmala, Kenzer, & Bauer, 2012; Snyder et al., 2015). Hofmann, Schmeichel, and Baddeley (2012) state that inhibition enables an individual to restrict thoughtless behaviour; the authors also distinguish between two types of inhibition, namely, active and passive inhibition. Active inhibition is described as *do not do X*; the individual, therefore, suppresses a prepotent response, for example, shouting out an answer in class at an inappropriate time. Passive inhibition is *do Y*, where the individual utilises only relevant data stored in working memory for the task at hand, while inhibiting all non-relevant information.

Inhibition is a crucial aspect of self-regulation that requires self-awareness and is a cognitive characteristic commanded in a sophisticated and evolved civilisation. This executive skill is of cardinal importance for ideal and peak achievement, but also a fundamental requirement in curbing the disregard and violation of generally acceptable laws and customs of societal functioning (Baumeister, 2014). Deficits in inhibitory control are associated with reckless actions and conduct (Pharo, Sim, Graham, Gross, & Hayne, 2011) and with the development of ADHD symptoms (Barkley, 1997). Individuals who demonstrate weak inhibitory control are easily side-tracked by information not relevant to the task at hand and struggle to restrict and manage negative data and messages entering working

memory. Consequently, this contributes to rumination on the negative subject data, which, in turn, can increase the chances of the development of depression (Joormann, 2010).

Elementary inhibitory control starts to develop within the first year of a child's life. This is observable when an infant refrains from continuing with a pleasant activity when the primary caregiver calls on the infant to do so. More advanced inhibition develops when the toddler is required to keep other information in mind that is stored in working memory and suppress dominant responses. This form of more complex response inhibition develops from around the age of four years (Garon et al., 2008). There are factors that can influence the development of inhibition in childhood; for example, babies who are born preterm tend to have impaired inhibitory control that negatively influences attentional control and academic performance as they grow older (Jaekel, Eryigit-Madzwamuse, & Wolke, 2016). Marshall et al. (2016) found that childhood trauma contributed strongly to deficient inhibitory control. The anatomical brain region associated with the executive skill of inhibition is located in the orbitofrontal cortex (Bryden & Roesch, 2015; Horn, Dolan, Elliott, Deakin, & Woodruff, 2003).

Inhibition is at the core of positive development and well-being; therefore, exploring interventions that can aid the improvement of this skill is vital (Diamond & Lee, 2011; Jasinska et al., 2012). Reflective and thoughtful practices such as mindfulness are avenues that may prove supportive and constructive in this regard (Dunne et al., 2012), since mindfulness enables one to manage emotional experiences in the present moment and to not get carried away in the stream of mindless thoughts and rumination. Rather, mindfulness facilitates focused attention on an identified object or goal (Greeson, 2009). There are a number of studies that concur on this matter: Heeren, Van Broeck, and Philippot (2009) found that adults who had undergone mindfulness meditation training showed improved cognitive inhibition; Oberle, Schonert-Reichl, Lawlor, and Thomson (2012) reported improved inhibitory control in adolescents who reported higher levels of mindfulness; and

Greenberg, Reiner, and Meiran (2013) suggest that mindfulness is associated with less rumination.

While the discussion above focused on the construct of executive functioning, the second construct of this research, namely, self-compassion, will be described below.

Self-compassion

Conceptualization and correlates of self-compassion

According to Buddhist psychology, self-compassion and compassion for others go hand in hand, and therefore, self-compassion can be neither self-centred nor selfish. Compassion for others and for the self, share the characteristics of kindness, tolerant understanding, open observance, and non-resistance, with the difference that self-compassion is directed towards the self and compassion towards others (Neff, 2003a). Roeser and Eccles (2015) describe compassion as an inherent quality unique to mammals, which have a need for nurturing and coaching in a social environment to develop and prosper. It is a complex construct that embodies processes that are perceptual, cognitive, and social. Feldman and Kuyken (2011) view compassion according to the Buddhist tradition as the heart that trembles in the face of suffering. Therefore, it is a constructive, caring, and supportive approach and mindset towards the unavoidable pain, hardship, discomfort, and misfortune that every individual will face during the course of his/her life and an understanding and acceptance that not all affliction, agony, and suffering can be avoided, healed, or altered. An attitude of self-compassion presents the individual faced with suffering with the option of being more open to his/her suffering and all it entails, with the hope of healing or some kind of relief (Germer & Neff, 2015). Self-compassion is compassion turned inwards, towards oneself, and is comprised of three main bipolar factors: self-kindness versus self-judgement, mindfulness versus overidentification, and common humanity versus isolation (Neff, 2016). Self-compassion requires treating oneself with kindness, grace, and empathy when faced with suffering, disappointments, and challenges, while knowing and understanding that one is not

isolated in experiencing hurt, fear, inadequacy, and suffering, but that these are part of the human condition.

Although compassion and self-compassion are similar regarding their primary elements, they do not correlate significantly. In this regard, López, Sanderman, Ranchor, and Schroevers (2018) found that persons from a low social class and low level of education ranked higher in compassion, but lower in self-compassion; the authors concluded that self-compassion necessitated well-developed cognitive processing. In a meta-analysis carried out by Yarnell et al. (2015), it was found that women had more compassion for others than men did, but that they tended to have less self-compassion. According to the authors, this could be attributed to the inner communication style of women, which tended to be more negative and self-critical, and could, furthermore, be associated with the higher occurrence of depression among females than among males.

Self-compassion encourages the individual to turn towards his/her suffering and to not disconnect from it, having an awareness, an openness, and even a curiosity towards one's own pain, anguish, and difficulty (Neff, 2003c). Self-compassion is in contrast to being self-absorbed, egotistical, or egocentric when faced with pitfalls and trouble during the course of life. Rather, it is a more benevolent attitude towards oneself, with less self-criticism and self-judgement (Germer & Neff, 2015). Longe et al. (2010) found that there was a divide between the dorsal and ventral prefrontal cortex pertaining to self-criticism and self-reassurance: self-criticism was linked to the dorsolateral prefrontal cortex, whereas self-reassurance was affiliated with the ventrolateral prefrontal cortex.

Lacking self-compassion can harm one's well-being and make it taxing to cope with and handle negative life events. Ehret, Joormann, and Berking (2015) postulate that low self-compassion and high levels of self-criticism may increase one's vulnerability to psychological and emotional distress, while Marsh, Chan, and MacBeth (2018) suggest that individuals lacking self-compassion often experience difficulty in coping with emotional

problems and challenges. There are numerous studies that provide adequate support for the notion that self-compassion promotes well-being. Galla (2016) indicates that high and healthy levels of self-compassion decrease unhealthy rumination, lessen negative affect, and improve the way everyday tension and pressure are observed and managed. Self-compassion aids the individual in coping and adjusting after divorce or separation, as it enables the person to become aware of and accept negative emotions and thoughts without becoming entangled in cruel self-attack and accusations. Self-compassion interventions show significant promise for addressing anxiousness, tension, and symptoms of depression (Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016).

Empirical evidence points to self-compassion (self-kindness, common humanity, and mindfulness) and its kinship with both eudaimonic and hedonic well-being. In this regard, Barnard and Curry (2011) cite many correlational studies such as the positive correlation between self-compassion and positive affect and the negative correlation with regard to anxiety and depression. Self-compassion not only benefits emotional and psychological well-being; in addition, it can positively influence physical well-being. In this regard, Terry and Leary (2011) are of the opinion that self-compassion may bolster self-regulation, which, in turn, can assist an individual in modifying and regulating his/her behaviour to become more health conscious and to attend to health problems earlier rather than later. According to Sirois, Kitner, and Hirsch (2015), self-compassion inspires and strengthens positive emotions and can, as a result, cultivate and promote healthy lifestyle changes. Self-compassion cultivates a way of being where one is not severely and devastatingly affected by negative emotions should one fail at reaching a health-related goal, but of rather being open-minded, accepting what is, and being willing to try again or amend the goals. The correlations between self-compassion and performance and achievement are positive, and there is an indication that individuals higher in self-compassion are more accurate in their perceptions regarding their competence and can, therefore, set more realistic goals for themselves (Leary,

Tate, Adams, Batts Allen, & Hancock, 2007). The association between self-compassion and social interaction is positive, as individuals higher in self-compassion tend to show more closeness in interactions between themselves and their family, friends, and society (Barnard & Curry, 2011; Neff & Pommier, 2013).

Even though self-compassion can be linked to various psychological, physical, and social benefits, there are still individuals who resist being self-compassionate (Robinson et al., 2016). The reason could be in the conceptualisation of self-compassion as having an instrumental value that can either hamper or benefit the pursuit of goals and objectives. An individual low in self-compassion can, therefore, decide that being self-compassionate can have a negative impact on his/her striving for success and ambition and can consider self-criticism as an indication of determination, accountability, and sensibleness. This contrasting view can then be regarded as motivation, and self-compassion falls by the wayside. The person who is inclined to be afraid of the negative outcomes of self-compassion will, as a consequence, ignore the psychological and social advantages associated with self-compassion (Robinson et al., 2016).

To grasp the value of self-compassion, it is necessary to look at both the positive and negative aspects, as they present a more comprehensive understanding of the construct, and each aspect reflects a different response to suffering, pain, challenge, or disappointment (Neff, 2016). A description of the three bipolar factors of self-compassion and how they have an impact on and influence the well-being of the individual follows.

The bipolar dimensions of self-compassion

Self-kindness versus self-judgement

Self-kindness is synonymous with benevolence, empathy, and understanding towards oneself when facing personal shortcomings, vulnerabilities, adversity, and difficulties and is the opposite of harsh self-criticism, judgement, and negative evaluation of oneself during such personal experiences (Smeets, Neff, Alberts, & Peters, 2014). Smith, Guzman, and Erickson

(2018) describe self-kindness as a healthy, constructive, and valuable internal approach when feeling threatened in situations where one is confronted with disapproval and exclusion. Responding with self-kindness will include being calm, understanding, and open-minded during times when faced with one's own inadequacies, shortcomings, and mistakes made; it requires one to be warm-hearted, patient, and considerate towards oneself. Self-critical individuals, however, feel isolated, abandoned, and not good enough and often loathe themselves when confronted with their own failures and imperfections (Gilbert et al., 2010).

Longe et al. (2010) found that there was a relationship between the dorsolateral prefrontal cortex (DLPFC) and increased levels of negative self-talk. They reported that self-criticism activated the lateral prefrontal cortex and the dorsal anterior cingulate. These brain areas are associated with inhibitory control and error monitoring, whereas self-soothing and encouragement activate the left temporal pole and insula, the same as when one shows compassion, warmth, and kindness to others.

The risk of psychopathology is heightened when individuals are too self-critical during setbacks and difficulties instead of being self-understanding and considerate towards themselves (Gilbert, Baldwin, Irons, Baccus, & Palmer, 2006). Individuals who have self-kindness and self-warmth may be less prone to obsession over personal errors and disappointments that contribute to the development and/or enhancement of mental illness symptoms (Longe et al., 2010).

Mindfulness versus over-identification

Mindfulness is being in the present moment with a non-judgemental acceptance and awareness, acknowledging and observing what is. Being mindful enables one to be open and sensitive to experience, thoughts, and emotions (Teper et al., 2013). The opposite of mindfulness is overidentification, described as being caught up in the content of what is happening, a fixated and even obsessive and overanalysing way of observing and trying to understand personal emotions, thoughts, or experience (Neff, 2016). Research has shown that

overidentification is related to psychopathology (Muris, Otgaar, & Petrocchi, 2016), whereas mindfulness is associated with psychological well-being (Schroevers & Brandsma, 2010). Mindfulness lowers stress, builds and strengthens resilience, cultivates and nourishes appreciation and gratitude, and sparks motivation and engagement in novel interests and encounters that benefit health and well-being (Bluth & Eisenlohr-Moul, 2017).

Baer, Smith, Hopkins, Krietemeyer, and Toney (2006) view mindfulness as a multifaceted construct comprised of five elements:

- One is non-reactive towards one's interior awareness.
- One becomes an observer, just noticing thoughts and emotions.
- One is conscious and paying attention in the present moment.
- One describes with non-attachment what one is sensing in the present moment.
- One does not arbitrate or condemn one's in-the-moment inner experience, be it thoughts or emotions.

Roeser and Eccles (2015) describe mindfulness as a contemplative and wilful discipline that, with continuous practice, can advance from state mindfulness to trait mindfulness, with the promise of improved conscious attention and self-regulation. There are various studies that suggest that mindfulness contributes to improved executive functions. On this subject, Teper and Inzlicht (2012) theorise that meditation enables an individual to identify, acknowledge, accept, and regulate his/her emotions better, which puts the individual in a favourable position to identify errors early, resulting in enhanced executive control. In a study done by Van Vugt and Jha (2011), the authors reported that mindfulness meditation training could possibly contribute to improved working memory. Another study found that mindfulness reduced mind-wandering (Jha et al., 2015).

Tang, Tang, and Posner (2016) found that, during mindfulness meditation, the anterior cingulate cortex (ACC) and medial prefrontal cortex (MPFC) in the brain were activated and

that these areas were also engaged during emotional control. The authors are, therefore, of the opinion that mindfulness meditation may foster improved self-regulation and, consequently, hold promise in the treatment of addictive behaviours, which are linked to deficient self-regulation.

Common humanity versus isolation

According to Neff et al. (2007), individuals are often narrow-sighted, in the sense that they feel they are unique and isolated in their life challenges, struggles, and personal shortcomings. Having a perspective of common humanity can aid individuals in having a broader view of the situation in a wider and more inclusive context, recognising that the suffering they as individuals are experiencing is shared by many in society and the world. Common humanity permits one to consider many aspects and factors that contribute to present-moment experiences, be it one's DNA, the family in which one was raised, one's social background, the economic era, and/or environmental factors; all of these can influence our lives, perspective of life, and experiences (Neff & Tirch, 2013). The benefit of opting for a rational and balanced view of oneself and recognising one's place in humanity is an understanding and acceptance of oneself and others.

Compared to mindfulness and self-kindness, studies regarding the subject of common humanity in the context of self-compassion are limited; therefore, one is compelled to explore common humanity via the negative and opposite end, namely, isolation. Understanding isolation may contribute to and expand one's understanding and the value of common humanity. Isolation is described as alienation and separation from healthy social relationships. When an individual feels estranged from others or society at large, the risk for depression increases, especially when social isolation is accompanied by a feeling of loneliness (Matthews et al., 2016). Hanley, Baker, and Garland (2017) emphasise the importance of perceiving oneself as affiliated or part of a group, as this feeling of interconnectedness is associated with positive psychological functioning. The authors,

furthermore, indicate that individuals with sharp and solid boundaries with respect to others place themselves in competition and in a position of resistance towards others, which hampers psychosocial well-being. When one perceives oneself as a changing and adaptable being in life, a cognitive and psychological environment is cultivated, which underpins true and genuine happiness. In addition, the awareness and acceptance of one's interrelatedness with the surrounding environment and the broader social context may contribute to establishing harmony, understanding, and kinship in relationships with others and may benefit emotional and cognitive functioning (Dambrun & Ricard, 2011). Cacioppo and Hawkley (2009) state that individuals who feel isolated from others are at greater risk for impaired cognitive functioning, rapid cognitive deterioration during aging, impaired executive functioning, and despondency.

Above, a problem statement motivating the study was given, and the constructs of executive functioning and self-compassion intended for use in this research were explicated. Below, the research question and aims are presented.

Research Question and Aims

The above exposition of executive functioning and self-compassion allowed a research question to emerge: could profiles of self-compassion be identified in participants by means of latent profile analysis (LPA), and would dimensions of executive functioning predict profile membership of the self-compassion profiles?

The aims of the research were as follows:

General aim: to perform LPA on self-compassion scores of participants and to determine whether executive functioning dimensions would predict self-compassion profile membership.

Specific aims:

- To identify self-compassion profiles of the research participants by means of LPA and through the use of Mplus 8.3 (Muthén & Muthén, 2019).

- To determine whether factors of executive functioning identified by means of Confirmatory factor analysis (CFA) would predict self-compassion profile membership using regression analysis.

The next section explains the methodology of this research.

Research Methodology

A paradigm perspective in research has three facets that guide the research, namely, ontology, epistemology, and methodology; these facets are interrelated and, therefore, restrain one another (Terre Blanche & Durrheim, 2006). Taking the general objective of this study into consideration, a positivist approach was followed, where the ontology or the fundamental nature of social phenomena being researched is external to an individual's view and understanding of reality. Therefore, a distinction exists between the external reality and the meaning and beliefs held by individuals regarding this reality (Cohen, Morrison, & Manion, 2011). The epistemology of a positivist approach is that of objectivism. Therefore, in this study, phenomena were observed objectively and independently from the researcher (Scotland, 2012). The methodology demanded from an objectivist stance is quantitative, and statistical inferences regarding the objectively surveyed population were made.

In this research, both a literature study and an empirical study were done, as explained below.

Literature study

The starting point for any study is, firstly, a thorough literature study, in which the literature review needs to be comprehensive, and the researcher has the responsibility to methodically comb, scrutinise, critically assess, and integrate the literature of previous research and writing to support the stated research question (Aveyard, 2014). The inclusion criteria for the literature study were as follows:

- Keywords – self-compassion, self-kindness, mindfulness, common humanity, executive function, shift, inhibition, self-monitor, and emotional control
- Literature primarily from 2010
- Peer-reviewed articles and journals
- Academic textbooks

Sourcing avenues:

- Electronic searching using search engines such as Google, Google Scholar, and Google Books and the electronic databases of the North-West University Library
- Hand searching at academic libraries such as the North-West University Library and Pretoria University Library

A literature study was the foundation for the empirical study. The empirical process contained the following steps: the research design, who the participants would be, what the measuring instruments were that would be utilised, and how the data would be analysed statistically.

Empirical study

In this research, a quantitative single-event cross-sectional survey design was used. In such a research design, a quantitative or numeric description of trends, attitudes, or opinions of a population is obtained by studying a sample of that population by means of questionnaires completed by participants (Creswell, 2009). This design reflects a post-positivist approach or ontology (Lincoln & Guba, 2000).

Participants and Research Procedures

The target population of this study consisted of 250 adults between the ages of 18 and 65 years. Apart from age, the prerequisites were voluntary consent to participate and that participants were literate in English in order to complete the measurements. These

participants were recruited by relevant supervisors in the City of Tshwane Metropolitan Municipality who voluntarily made themselves available for this responsibility as follows:

- Metro Police trainees in the Metro Police Department of the City of Tshwane – recruited by the Superintendent: Police Technology and Research
- Firefighters employed in the Tshwane Emergency Services Department – recruited by the company commander of the relevant functional unit

The researcher presented an hour-long training session for the recruiters to ensure that they were well informed regarding the study, their responsibilities, and the ethical requirements that had to be adhered to at all times.

Written permission to conduct the research was obtained from the Research and Innovation Department of the City of Tshwane Metropolitan Municipality. The sampling method was non-probabilistic and convenient. The recruiters arranged a date, time, and venue with their relevant departments and prospective participants in the Tshwane Metropolitan Municipality timeously to attend a brief introduction regarding this research study. During this session, the recruiters provided a concise explanation of the purpose of the research and gave the researcher an opportunity to briefly introduce the constructs of self-compassion and executive function to the participants. An invitation and an information leaflet were given to prospective participants for their consideration and perusal. The leaflet contained the following important information: the purpose of the study; a brief description of the main constructs; the voluntary nature of participation and the confidentiality of personal information and individual results; that data would be collected by means of questionnaires; the risks and benefits as a result of participation in the study; and the contact information of the primary investigator, supervisor, and co-supervisor. Aspects that were emphasised during this introductory session were that participation in this study was voluntary, that any prospective participant could refuse participation or withdraw at any time without any

consequences, that the results of each individual would be confidential, and that the employer would not have access to, or insight into, any confidential information other than the results as published in the final article. After the introduction, there was time for questions and answers, and only then were the required informed consent forms distributed. In this document, each participant confirmed in writing that he/she understood the research process, that participation was voluntary, and that the individual had the right to refuse participation and/or withdraw at any stage during the study without any negative consequences. Every prospective participant was given 48 hours to decide whether he/she would like to participate or not. The researcher was available during the introductory sessions to answer any questions or concerns that the participants might have.

Once the signed consent forms had been returned, a date, time, and venue were arranged with each group of participants to complete the measurements. The size of the groups was between eight and 25, depending on the section or unit. This study required participants to complete a short demographic questionnaire and two survey questionnaires manually. The survey questionnaires consisted of the three positive subscales of the self-compassion scale, namely, self-kindness, mindfulness, and common humanity (Neff, 2003a), and the five subscales of the Executive Function Index (Spinella, 2005), namely, empathy, strategic planning, organisation, impulse control, and motivational drive. The time frame allocated for the introductory session was 45 minutes, and the time frame allocated for the completion of the questionnaires was estimated not to exceed 60 minutes.

Data collection

Data was collected by means of the following validated questionnaires, administered by the researcher:

The Self-Compassion Scale (SCS) (Neff, 2003a)

The Self-Compassion Scale is a 26-item self-report measure, used for the assessment of how compassionate individuals are towards themselves in times of suffering, judgement, and

difficulties. The primary components of this scale are self-kindness, common humanity, and mindfulness. These elements contain both positive and negative aspects that give rise to the following six subscales:

- Positive subscales
  - Self-kindness
  - Common humanity
  - Mindfulness
- Negative subscales
  - Self-judgment
  - Isolation
  - Overidentification

Responses to the 26 items are according to a five-point Likert-type scale, ranging from 1 – Almost Never to 5 – Almost Always (Neff, 2003a). The SCS demonstrates sound psychometric properties, and according to Neff and Pommier (2013), the SCS shows convergent validity and discriminate validity, as well as high reliability of $\alpha = 0.93$, while Neff (2003a) also reported a good test retest reliability. A total self-compassion score is calculated by, firstly, reverse coding the item scores for the negative subscales. The second step requires calculating the mean scores for each subscale. Then these mean scores are summed. The final step is to calculate a grand mean score for all six subscales (Neff, 2019). Neff and Germer (2018) provide the following guide when interpreting self-compassion scores: a score of 1 to 2.5 can indicate low self-compassion, 2.5 to 3.5 can be regarded as moderate self-compassion, and a score of 3.5 to 5 can be indicative of high self-compassion. For this study, the scale was adapted slightly by changing some words in Statements 1, 16, and 17, which proved unclear in a pilot test run with six volunteers. The SCS was previously used in a study in a South African context that evaluated a nine-week mindfulness-based

intervention and its impact on self-compassion, self-determination, and perceived stress (Whitesman & Mash, 2015). The Self-Compassion Scale is available for research in the public domain (Neff, 2003b).

Executive Function Index (EFI) (Spinella, 2005)

The Executive Function Index is a brief, but comprehensive, self-rated instrument in assessing executive functions that was developed by Spinella (2005), who acknowledged executive function aspects such as emotions and motivations as part of an individual's normal everyday functioning. The index consists of 27 items scored on a five-point Likert-type scale, ranging from 1 – Never to 5 – Very Much. The items cover a wide array of executive functions as indicated by the five subscales for empathy (EM), strategic planning (SP), organisation (ORG), impulse control (IC), and motivational drive (MD). These scales correspond to the categorisation of executive functions as metacognitive and emotional/motivational, as well as to the distinction that is made between hot and cool executive functions. In addition, a second-order factor analysis demonstrates three higher-order factors that contain the subscale items as follows (Spinella, 2005):

- Orbitofrontal with IC and EM
- Dorsolateral with SP and ORG
- Medial prefrontal with MD

The EFI shows adequate reliability for the subscales (α = 0.55 to 0.74) and good internal consistency with a Cronbach's alpha of 0.82 for the total score and the following for the individual subscales: empathy – 0.76; strategic planning – 0.70; organisation – 0.75; impulse control – 0.69; and motivational drive – 0.70 (Spinella, 2005).

Scoring is straightforward, as the EFI assesses executive function and not dysfunction; therefore, higher scores are indicative of better executive functioning. To obtain the total score, the scores of the subscales are summed.

The EFI was used in a South African study where executive function was found to be a predictor of post-traumatic growth (Hyslop, 2016). The Executive Function Index is available in the public domain for research (Spinella, 2009).

Demographic information was obtained from the participants by means of a questionnaire enquiring about aspects such as gender, age, home language, and level of education.

Data analysis

Participants' scores on the questionnaires (raw data) were electronically captured by the researcher and checked for correctness. After that, the data was given to the Optentia statistical consultant for assistance with statistical analysis. Descriptive statistics were calculated by using the SPSS 23 system. Structural equation modelling by means of Mplus 8.3 (Muthén & Muthén, 2019) identified latent profiles of self-compassion (Latent profile analysis, LPA). Mplus 8.3 also determined reliability and regression coefficients as predictors.

Ethical Considerations

The well-being and rights of the research participants and others who might be affected by the study are crucial and of primary importance – from the planning phase, during implementation, and in finally reporting the results. Van der Riet and Durrheim (2006) identify three major aspects that must be honoured during any research project: autonomy, beneficence, and non-maleficence. Allan (2008) highlights the following ethical aspects that must be adhered to with regard to research:

- The dignity of each participant should be protected and respected.
- Informed and voluntary consent must be obtained.
- Secure confidentiality, and therefore, ensure that no personal information of participants is disclosed.

- The intended research should be designed and implemented with scientific merit and should benefit society at large.
- The appropriate methodology should be followed.
- The research project should not cause harm to any participant or any other person, and possible risks should be identified proactively.

In addition to complying with the above, a professional counsellor was appointed and available if any participant were to require counselling as a result of this research study. All ethical guidelines and requirements were adhered to, and ethical clearance was obtained from the Human Health Ethics Committee of the North-West University.

Chapter Division

Chapter 1: Introduction

Chapter 2: Research article: Self-compassion profiles and executive functioning of a group of South African municipal employees

Chapter 3: Conclusions, limitations, and recommendations

References

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CHAPTER 2

MANUSCRIPT: SELF-COMPASSION PROFILES AND EXECUTIVE FUNCTIONING OF A GROUP OF SOUTH AFRICAN MUNICIPAL EMPLOYEES

Keywords: executive functioning, executive functioning index, latent profile analysis, self-compassion, self-compassion scale.

Abstract

Orientation: executive functions provide one with the cognitive resources for one's day-to-day functioning, whereas self-compassion has emerged as a self-related resource of resilience and well-being.

Purpose of the study: to conduct latent profile analysis on self-compassion scores of participants and to determine whether executive functioning dimensions would predict self-compassion profile membership.

Motivation for the study: a research gap existed that related to the interplay between executive function dimensions and the subcomponents of self-compassion in a South African context.

Research design and method: latent profile analysis was used that was comprised of 250 participants who completed two validated questionnaires: Self-Compassion Scale and the Executive Function Index.

Main findings: the study revealed four self-compassion profiles: low, moderate, high, and thriving. Individuals in the high and thriving self-compassion profile categories tended to use the executive function dimensions of organisation and strategic planning, whereas individuals with moderate self-compassion in addition used the executive function dimension of motivational drive.

Implications and recommendations: the implications of the main findings were that further research was needed to examine the possible interplay between self-compassion and executive function dimensions in a South African context, which is a rich, culturally diverse society with a history of social and economic challenges.

Conclusion: identifying self-compassion profiles and their possible interplay with executive dimensions contributed to the current scientific knowledge of both constructs and beckoned further research.

Keywords: common humanity, empathy, executive function, inhibition, mindfulness, motivational drive, organisation, self-compassion, self-kindness, strategic planning.

The two constructs that were examined in this study, namely, executive functions and self-compassion, are pivotal in navigating through life's journey. Executive functions are conceptualised as a group of cognitive skills in the domain of neurocognition (Meltzer, 2018) that are latent at birth, but with the inherent potential to be developed (Diamond, 2006). These skills are cognitive processes primarily associated with the prefrontal lobes (Otero & Barker, 2014) that underpin and aid adaptive, purposeful, and goal-directed behaviour in non-routine and novel situations or circumstances (Barkley, 2012). They are also essential for school readiness (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008), academic achievement (Best, Miller, & Naglieri, 2011), career success (Kern, Friedman, Martin, Reynolds, & Luong, 2009), and social functioning (Anderson, 2002).

Self-compassion has emerged as a justified and valuable self-related construct and inner resource that facilitates well-being; it can be described as the way one relates, behaves, and communicates with oneself in times of struggle, pain, and misfortune. During unpleasant life circumstances, individuals who are self-compassionate will be attentive, caring, and considerate towards themselves, knowing that they are not alone in their suffering, but part of humankind and society, thereby placing their challenges in a wider context that buffers against self-criticism, overidentification, and isolation (Bluth, Mullarkey, & Lathren, 2018). Self-compassion is a mechanism that can potentially help individuals build resilience (Bluth & Eisenlohr-Moul, 2017) and strengthen their means of coping in times of suffering and personal adversity (Allen & Leary, 2010). This is especially important in a South African context, which is characterised by socio-economic challenges (Morgan, 2013) and psychosocial stressors such as violence, abuse, poverty, unemployment, and single parenthood (Cluver, Orkin, Boyes, & Sherr, 2015).

A brief synopsis follows of the theoretical frameworks of both executive functions and self-compassion, including the conceptual subcomponents that are relevant to this study.

Literature Background

Theoretical frameworks of both executive functioning and self-compassion, including the conceptual dimensions that are relevant to this study.

Executive functions

There are three primary executive functions: working memory, cognitive flexibility, and inhibition (Lehto, Juujärvi, Kooistra, & Pulkkinen, 2003). *Working memory* is the ability to hold and maintain a limited amount of information and have that information available for the purpose of accomplishing a task or solving a novel problem (Cowan, 2014). *Cognitive flexibility* refers to the cognitive potential to consider different sets of information and apply what is most appropriate and necessary pertaining to the task at hand (Elen, Stahl, Bromme, & Clarebout, 2011). Lastly, *inhibition* is the cognitive capability to constrain and suppress prevailing, rampant, and automatic thoughts, responses, and behaviour that might not be appropriate to or benefit the current situation or goal (Friedman, 2016). Although executive functions can clearly be distinguished from one another, they do not develop and function independently; they interact and influence one another (Anderson, 2010), a process that underlies the development of further executive function skills such empathy, motivation, strategic planning, and organisation. It should be added that this list is not exhaustive and that there are various other executive skills such as metacognition, time management, task initiation, and sustained attention (Dawson, 2014) that are not explicated in this research.

For the purposes of this study, it is necessary to briefly describe the five executive dimensions as reflected in the Executive Function Index (Spinella, 2005), namely, empathy, motivational drive, strategic planning, organisation, and inhibitory control.

Empathy is the complex emotional and cognitive competence to objectively perceive and understand what another person or group of people might be feeling or experiencing, without being enveloped or overpowered by the experience (Decety & Lamm, 2006). This skill is fundamental in fostering healthy interpersonal and societal functioning (Riess, 2017). In a

South African study conducted by Kruger (2011) that used the Executive Function Index (Spinella, 2005) as one of the measuring instruments, the author found that empathy correlated with satisfaction with life, although the correlation was not significant.

Motivational drive refers to a cognitive energising process that has an intrinsic origin and directs one's thoughts and behaviour to achieve a goal, avoid punishment, or for personal intrinsic value interest (Pessoa, 2009; Reiss, 2012).

Strategic planning is a metacognitive skill that enables individuals to integrate other executive functions and deliberately prioritise, organise, and formulate tasks, steps, and available resources in a manner that will assist in achieving a goal and solving challenges or problems (Dawson & Guare, 2009; Pennequin, Sorel, & Mainguy, 2010).

Organisation refers to the cognitive ability to arrange various elements such as information, time, materials, and available resources in a thoughtful way that is conducive to decision-making and goal achievement (Abikoff & Gallagher, 2008).

Inhibitory control is the cognitive competence to suppress automatic, prepotent responses and inappropriate behaviour relating to the current task or context (Pessoa, Padmala, Kenzer, & Bauer, 2012); it is also the blocking of attention to stimuli and information that are not relevant to the task, context, or problem at hand (Diamond, 2016).

Self-compassion, the other construct researched in this study, is briefly described below.

Self-compassion

Individuals who are self-compassionate can observe and experience their challenges, discouragement, and sorrow in life from a rational and open-minded stance (Muris, Meesters, Pierik, & De Kock, 2016). Self-compassion is not a sign of weakness or self-pity; rather, it is a responsible way of treating oneself that is not selfish or egocentric. Research has found that self-compassion aids motivation to change and improve when one has failed at a task and not to perceive and describe oneself as a total failure (Zhang & Chen, 2016). Self-compassion is

a resource that is always available and encourages a conscious, balanced, and reasonable concept and acceptance of oneself (Zessin, Dickhäuser, & Garbade, 2015).

Self-compassion, as described by Neff (2003b), includes both positive and negative elements that are reflected in how one thinks, feels, and acts when faced with suffering and difficulties in life. These positive and negative elements can also, correspondingly, be classified as compassionate and uncompassionate ways of responding (Neff, 2019). Positive compassionate responding reflects self-kindness, mindfulness, and a sense of common humanity, whereas uncompassionate responding will reflect self-judgement, overidentification, and isolation pertaining to the unpleasant situation. Relevant to this study are the positive elements of self-compassion, which are briefly described next.

Self-kindness is generated when an individual is gracious, tolerant, and understanding towards himself/herself during adversity, affliction, disappointment, and failure (Petrocchi, Ottaviani, & Couyoumdjian, 2014). Recognising and accepting that life is imperfect and that, as individuals, we are not perfect and do not have to be perfect under all circumstances are part of being kind and benevolent towards oneself. Furthermore, accepting one's shortcomings and failures as part of life, without judging oneself with harsh self-criticism, and deliberately choosing to turn towards these aspects with a demeanour that reflects compassion to the self are characteristics of self-kindness (Neff, 2012).

Mindfulness is an intentional non-reactive and non-judgemental way of paying attention to what one is experiencing in the present moment without being overwhelmed or absorbed by the awareness (Germer, 2004).

Common humanity requires one to place oneself and one's suffering in the wider context of humanity, the group, society, or culture in which one exists and functions, thereby acknowledging and accepting that the personal adversity, discomfort, and anguish one is experiencing is part of being mortal and that all of humanity is faced with similar experiences throughout the course of life (Neff, 2009). Common humanity is beautifully reflected in the

African ethical principle of Ubuntu: “I am because we are; and since we are, therefore I am” (Ogude, 2019).

Research Question and Aims

During the exposition of self-compassion and executive functioning in this study, a research question emerged: could profiles of self-compassion be identified in participants by means of latent profile analysis (LPA), and would dimensions of executive functioning predict profile membership of the self-compassion profiles?

The aims of the research were as follows:

General aim: to perform LPA on self-compassion scores of participants and to determine whether executive functioning dimensions would predict self-compassion profile membership.

Specific aims:

- To identify self-compassion profiles of the research participants by means of LPA and through the use of Mplus 8.3 (Muthén & Muthén, 2019).
- To determine whether factors of executive functioning identified by means of confirmatory factor analysis (CFA) would predict self-compassion profile membership using regression analysis.

Research Method

Both a literature study and an empirical study were conducted.

Literature study

A literature study is the foundation for any research, and therefore, a thorough literature review pertaining to both self-compassion and executive functioning was done. The literature was critically assessed and integrated in the study in support of the research questions and aims. Inclusion criteria for the literature review were based on these keywords: common humanity, empathy, executive function, inhibition, mindfulness, motivational drive, organisation, self-compassion, self-kindness, and strategic planning. Peer-reviewed articles

and journals, primarily from 2010, and academic textbooks were sourced, mainly using online search engines such as Google Scholar, Google, and Google Books, as well as the electronic database of the North-West University Library.

Empirical study

This study used a quantitative single-event cross-sectional survey design, which was in support of the positivist research paradigm (Creswell, 2009). Two self-rated questionnaires, the Self-Compassion Scale (Neff, 2003b) and the Executive Function Index (Spinella, 2005), were used to obtain quantitative numerical data, on which statistical analyses could be done to achieve the set aims and answer the research question.

Participants and Procedures

The study sample consisted of 250 participants who voluntarily participated in the research. These participants were recruited by relevant supervisors in the City of Tshwane Metropolitan Municipality who made themselves available for this responsibility. They were:

- Metro Police trainees in the Metro Police Department of the City of Tshwane, recruited by the Superintendent: Police Technology and Research; and
- firefighters employed in the Tshwane Emergency Services Department, recruited by the company commander of the relevant functional unit.

Written permission to conduct the research was obtained from the Research and Innovation Department of the City of Tshwane Metropolitan Municipality. The sampling method was non-probabilistic and convenient. All prospective participants received an invitation to participate in this study during an introductory session. Attached to the invitation was an information leaflet that briefly outlined the purpose of the study, the main constructs, risks and benefits as a result of participating in this study, and all ethical information. It highlighted that participation in the study was voluntary and that participants could terminate their participation at any stage without any repercussions. During this session, the researcher

had the opportunity to briefly introduce the prospective participants to the study and highlight important information. At the end of the introduction, the informed consent forms were distributed, and participants were granted 48 hours to consider their participation in the study and return the signed consent forms.

When the signed consent forms had been returned, a date, time, and venue were arranged with each group of participants to complete the measurements. This study required participants to complete two survey questionnaires manually, consisting of the Self-Compassion Scale (Neff, 2003b) and the Executive Function Index (Spinella, 2005). Demographic information was obtained from the participants by means of a questionnaire enquiring about aspects such as gender, age, home language, and level of education. Table 1 shows the demographic information supplied by the research participants.

Table 1: Characteristics of the participants (n = 250)

Item	Category	Frequency	Percentage
Gender	Male	125	50.0
	Female	125	50.0
Age	20-29 years	55	22.0
	30-39 years	153	61.2
	40-49 years	34	13.6
	50-59 years	7	2.8
	60-69 years	1	0.4
Language	English	11	4.4
	Afrikaans	14	5.6
	Setswana	38	15.2
	isiXhosa	7	2.8
	Xitsonga	29	11.6
	isiZulu	26	10.4
	Sesotho	9	3.6
	isiNdebele	16	6.4
	Tshivenda	25	10.0
	siSwati	5	2.0
	Sepedi	69	27.6
	Other	1	0.4
Educational level	Grade 10	2	0.8
	Grade 11	2	0.8
	Grade 12	122	48.8
	Trade/Technical/Vocational	13	5.2
	College/University	96	38.4
	Postgraduate	15	6.0

The population sample consisted of 250 participants, who were 50% male and 50% female. The ages of the participants ranged from 20 to 69 years, and participants with an educational level from Grade 10 to postgraduate qualifications were represented in this study.

The sample population, as indicated in Table 1, was also representative of all 11 official languages in South Africa.

Data collection

Data was collected by means of the following validated questionnaires, administered by the researcher:

The Self-Compassion Scale (SCS) (Neff, 2003a)

The Self-Compassion Scale is a 26-item self-report measure, used for the assessment of how compassionate individuals are towards themselves in times of suffering, judgement, and difficulties. The primary components of this scale are self-kindness, common humanity, and mindfulness. These elements contain both positive and negative aspects that give rise to six subscales:

- Positive subscales
  - Self-kindness
  - Common humanity
  - Mindfulness
- Negative subscales
  - Self-judgment
  - Isolation
  - Overidentification

Responses to the 26 items are according to a five-point Likert-type scale, ranging from 1 – Almost Never to 5 – Almost Always (Neff, 2003a). The SCS demonstrates sound psychometric properties, and according to Neff and Pommier (2013), the SCS shows convergent validity and discriminate validity, as well as high reliability of $\alpha = 0.93$. Neff (2003a) also reported good test-retest reliability. For the purpose of this study, the data was analysed by using the positive subscale scores of self-kindness, mindfulness, and common

humanity. Scoring of the SCS was done by calculating the mean for each individual item as follows: the scores for every individual item were summed and divided by n = 250. For this study, the scale was slightly adapted by changing some words in Statements 1, 16, and 17, which proved unclear in a pilot test run with six volunteers. The Self-Compassion Scale is available for research in the public domain (Neff, 2003b) and was previously used in a study in a South African context that evaluated a nine-week mindfulness-based intervention and its impact on self-compassion, self-determination, and perceived stress (Whitesman & Mash, 2015).

Executive Function Index (EFI) (Spinella, 2005)

The Executive Function Index is a brief self-rated instrument for assessing executive functions that was developed by Spinella (2005), who acknowledged executive function aspects such as emotions and motivations as part of an individual's normal everyday functioning. The index consists of 27 items scored on a five-point Likert-type scale, ranging from 1 – Never to 5 – Very Much. The EFI subscales are empathy (EM), strategic planning (SP), organisation (ORG), impulse control (IC), and motivational drive (MD). In addition, a second-order factor analysis demonstrates three higher-order factors that contain the subscale items as follows (Spinella, 2005):

- Orbitofrontal with IC and EM
- Dorsolateral with SP and ORG
- Medial prefrontal with MD

The EFI shows adequate reliability for the subscales (α = 0.55 to 0.74) and good internal consistency with a Cronbach's alpha of 0.82 for the total score and the following for the individual subscales: empathy – 0.76; strategic planning – 0.70; organisation – 0.75; impulse control – 0.69; and motivational drive – 0.70 (Spinella, 2005). Scoring is straightforward, as the EFI assesses executive function and not dysfunction; therefore, higher

scores are indicative of better executive functioning. To obtain the total score, the scores of the subscales are summed. The EFI was used in a South African study where executive function was found to be a predictor of post-traumatic growth (Hyslop, 2016). The Executive Function Index is available in the public domain for research (Spinella, 2009).

Ethical Considerations

All the following prescribed ethical aspects were adhered to in this study:

- Informed consent was obtained from every participant.
- Confidentiality of all personal information was secured and maintained.
- The dignity of each participant was respected and protected during this study and will be respected and protected during the distribution of results.
- The study was done with scientific merit and with the aim of benefitting society at large.
- The appropriate scientific methodology was followed in this study.
- The study was designed and executed in a manner that presented no harm or risk to any participant.

Ethical clearance was obtained from the Human Health Research Ethics Committee of the North-West University (Ethics number: NWU-HS-2018-0087).

Statistical Analysis

Data was collected from 250 participants and first explored through frequency and descriptive analyses with SPSS 25 (IBM, 2017). Mplus 8.3 (Muthén & Muthén, 2019) was used to analyse the data in more detail. The data was found to exhibit some skewness and kurtosis; thus, the maximum likelihood (robust) estimator (MLR) was used. Model fit was assessed through the use of the comparative fit index (CFI > .90), the Tucker-Lewis index (TLI > .90), the root mean square error of approximation (RMSEA < .80), and the standardised root mean square residual (SRMR < .08). The Akaike (AIC), Bayesian (BIC), and adjusted Bayesian (ABIC) information criteria were not reported for the confirmatory

factor analyses of the two measures, as no model comparison was involved. The respective reliability values of the scales were calculated with the Mplus software. This composite reliability statistic is more trustworthy than Cronbach's alpha when using latent variable modelling (Raykov, 2009). Latent profile analysis (LPA) was carried out by considering the values of AIC, BIC, and ABIC, as well as the significance of the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR LRT), the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR ALRT), and the parametric bootstrapped likelihood ratio test (PB LRT).

Results

In order to answer the research question, this study aimed, firstly, to identify the self-compassion profiles of the research participants by means of LPA and, secondly, to determine whether factors of executive functioning identified by means of confirmatory factor analysis (CFA) would predict self-compassion profile membership using regression analysis. By means of Mplus 8.3 (Muthén & Muthén, 2019), the original factor structures of the two questionnaires – the Self-Compassion Scale (SCS) and the Executive Functioning Index (EFI) – were evaluated. Some of the original items of the scales were not taken into account during the analyses, in which only 12 items from the SCS and 15 items from the EFI were finally included. There were two main reasons for the decision to use fewer items. Firstly, only items measuring the positive impact of self-compassion were used. Secondly, the sophisticated procedures of latent variable modelling in Mplus made it possible to identify items that would not provide meaningful contributions to the final statistical outcomes, which included a latent profile analysis.

To do LPA, the 12 SCS items were combined in different possible underlying latent profiles, not defined by the originally proposed factors. The best-fitting solution profile was finally regressed on the three EFI factors in order to investigate prediction of profile membership.

Descriptive statistics

Descriptive statistics are used to organise and condense data in a purposeful format (Maree, 2016). The descriptive information of the SCS and the EFI obtained from the research sample of participants is provided in Table 2. Means and standard deviations were calculated with SPSS 25 (IBM, 2017) and composite reliability scores with Mplus 8.3 (Muthén & Muthén, 2019). Although the means and standard deviations corresponded to those in the literature (Neff, 2003a; Spinella, 2005), the reliability indices were found to be problematic, especially for the elements of executive functioning. The self-compassion indicator of common humanity also showed low reliability. The reason for this was unclear and will be speculated on in the discussion to follow.

Table 2: Descriptive statistics and reliability coefficients

Variable		Mean	Std.Dev	p
Self-Compassion Scale (SCS):				
1.	Self-kindness	3.60	0.79	0.69
2.	Common humanity	3.58	0.79	0.50
3.	Mindfulness	3.79	0.72	0.63
Executive Functioning Index (EFI):				
4.	Motivational drive	4.31	0.69	0.46
5.	Organisation and strategic planning	3.40	0.41	0.09
6.	Empathy and impulse control	3.16	0.64	0.37

Confirmatory factor analysis (CFA)

In order to determine to what extent the data from the two questionnaires would fit the proposed factor structures, CFAs were performed. As the purpose of the study was not to look at relationships between the different variables, a measurement model was not specified.

Self-Compassion Scale (SCS)

Only the factors measuring the positive aspects of self-compassion were used in the CFA, namely, self-kindness, common humanity, and mindfulness. Of the 13 items included, Item 15 (*I try to see my failings as part of the human condition*) was removed from the analysis due to a high residual covariance of 17.83 with Item 3 (*When things are going badly for me, I see the difficulties as part of life that everyone goes through*). Afterwards, the three-factor model fit statistics were found to be at acceptable to excellent levels (Table 3).

Executive Functioning Index (EFI)

(Spinella, 2005) originally suggested five factors for the measurement of executive functioning, namely, motivational drive, organisation, strategic planning, impulse control, and empathy. However, a three-factor solution for the 27 items was also suggested, based on the brain regions where the activity for the five factors took place. These regions are the

medial prefrontal (motivational drive), dorsolateral prefrontal (organisation and strategic planning), and orbitofrontal (impulse control and empathy).

As the proposed five-factor structure did not fit the data even after the removal of some badly fitting items, it was decided to use the possible three-factor structure. Quite a few items again proved problematic, and some model development was necessary. Items with factor loadings below 0.35 (Byrne, 2012; Field, 2013; Wang & Wang, 2012) and with five or more high residual covariances (suggested cut-off > 2.58; (Brown, 2015) were deleted from the analysis. The newly specified three-factor model fit the data well. The fit statistics for the three separate CFAs are presented in Table 3.

Table 3: Fit statistics for confirmatory factor analyses (n = 250)

Model	x^2	*df*	MLR-adjusted x^2	RMSEA	CFI	TLI	SRMR
Self-Compassion Scale (F3)	77.95	51	88.31	0.05	0.93	0.91	0.05
Executive Functioning Index (F5)	172.54	109	184.47	0.05	0.85	0.81	0.60
Executive Functioning Index (F3)	71.88	62	79.05	0.03	0.96	0.95	0.05

F5 = five factors; F3 = three factors; χ^2 = chi-square; *df* = degrees of freedom; MLR = maximum likelihood (robust) estimator; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardised root mean square residual

Latent profile analysis (LPA)

Several steps were followed, the first of which was to determine the optimal number of latent profiles, after which the identified profiles were inspected and labelled. The third step was to predict membership of the proposed latent profiles.

Latent profile analysis (LPA) was conducted with Mplus 8.3 (Muthén & Muthén, 2019) to group participants according to their perceived levels of self-compassion based on the 12 identified items of the SCS. The number of latent profiles was increased with each model tested in order to determine the number of latent profiles present in the data. The models were compared to one another according to their lowest AIC, BIC, and ABIC values, relative entropy values, and three likelihood ratio tests, namely, VLMR LRT, LMR ALRT, and PBLRT (Wang & Wang, 2012). ABIC values are adjusted BIC values based on the sample size, in this case n = 250. Entropy values range from zero to one, with values smaller than 0.60 being unacceptable. Entropy refers to the measure of classification uncertainty.

The number of profiles was determined by the specification of five models, each increasing by one more profile. The five different models were compared according to the above-mentioned criteria. Table 4 shows the fit indices.

Table 4: Comparison of different LPA models (n = 250)

Model	AIC	BIC	ABIC	Entropy	VLMR LRT *p*-value	LMR ALRT *p*-value	PB LRT *p*-value
1-profile LPA	9192.69	9277.20	9201.12	-	-	-	-
2-profile LPA	8857.80	8988.10	8870.80	0.85	0.00	0.00	0.00
3-profile LPA	8772.73	8948.80	8790.29	0.78	0.08	0.08	0.00
4-profile LPA	8738.03	8959.89	8760.17	0.78	0.42	0.42	0.00
5-profile LPA	Best log-likelihood not replicated, increased number of random starts						

Note: names of statistical analyses abbreviated above.

The best log-likelihood value of -4306.02 was replicated numerous times in the four-profile analysis and checked by running the same model with random starting values increased to 800 and final stage optimisation at 80. The same result was produced. A five-profile analysis was run, but did not replicate the best log-likelihood value. It was, therefore, decided to accept the four-profile solution, and even though its VLMR LRT and LMR ALRT values were not significant, its PB LRT was highly significant. According to Wang and Wang (2012, p. 294), "Among all the approaches of determining the number of classes [profiles] … the [A]BIC and [P]BLRT perform the best". The authors cite Nylund (2007) and Nylund, Asparouhov, and Muthén (2007) in this regard.

Classification probabilities calculated in the four-profile model were all above 0.85, indicating the quality of the most likely latent profile assignment, as it exceeded the suggested cut-off value of 0.70 (Wang & Wang, 2012). Entropy for the four-profile analysis was 0.78, just below a high accuracy of profile division. Suggestions around the indication of clarity of profile distinction are high (1.00 to 0.80), medium (0.79 to 0.60), and low (0.59 to 0.00; Wang & Wang, 2012).

The four identified profiles were labelled as follows: Profile 1 – low self-compassion (9.35%); Profile 2 – moderate self-compassion (22.80%); Profile 3 – thriving self-

compassion (29.91%); and Profile 4 – high self-compassion (37.94%). They are illustrated in Figure 1 and are described in the discussion that follows.

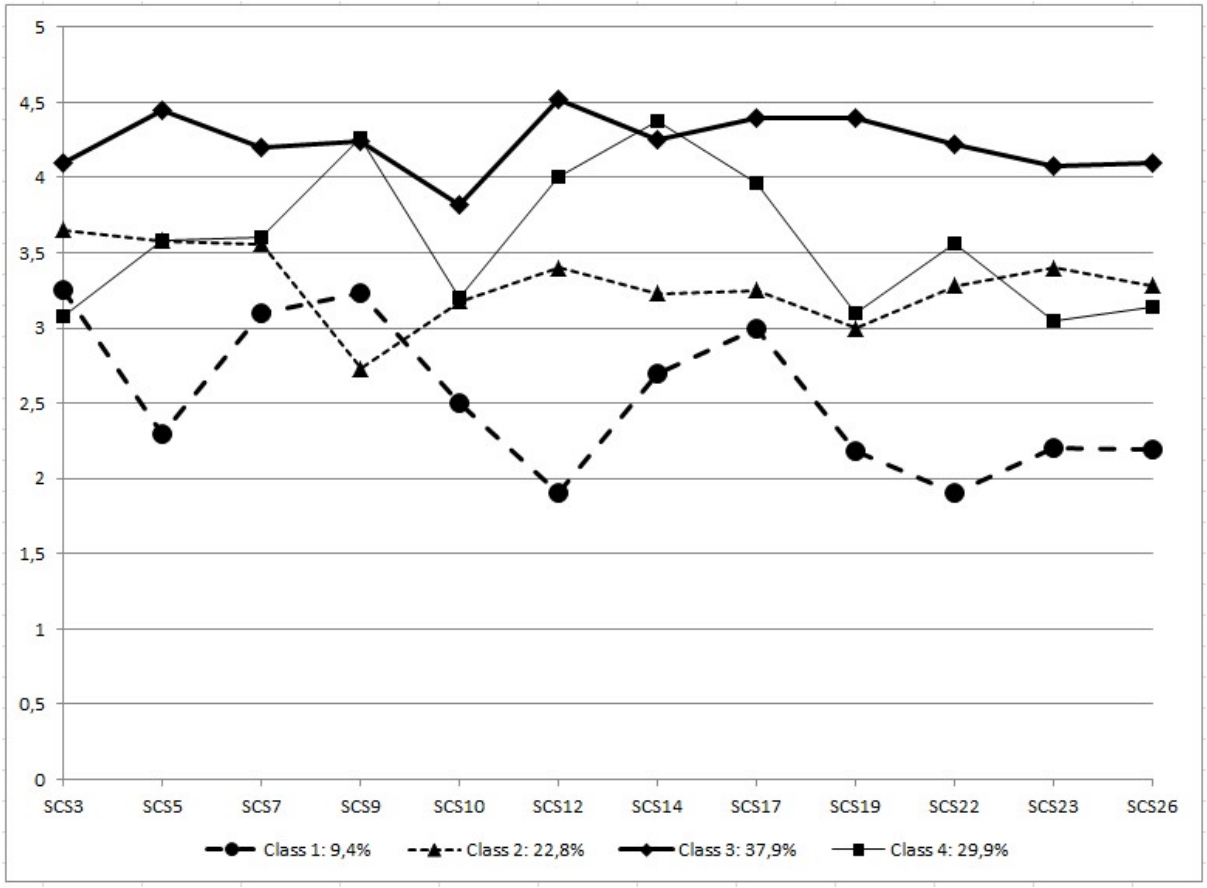

Figure 1. The four identified latent profiles

Each of the four identified SCS profiles were regressed on the three factors confirmed in the EFI in order to predict possible profile membership, namely, motivational drive, organisation and strategic planning, and impulse control and empathy. The outcomes are presented in Table 5.

Table 5: Regression coefficients for the different latent profiles

	Low SC ON		Moderate SC ON		Thriving SC ON	
Motivational drive	-0.03		1.16**		0.18	
Organisation and strategic planning	-1.66*		-0.04		-0.00	
Empathy and impulse control	-0.03*		-0.00		-1.01	
	Low SC (1) compared to					
	Moderate SC (2)		**Thriving SC (3)**		**High SC (4)**	
Motivational drive	1.19**	(1 < 2)	0.20		0.03	
Organisation and strategic planning	1.62*	(1 < 2)	1.66*	(1 < 3)	1.66*	(1 < 4)
Empathy and impulse control	0.03		-0.98		0.03	
	Moderate SC (2) compared to					
			Thriving SC (3)		**High SC (4)**	
Motivational drive			-0.98		-1.16**	(4 < 2)
Organisation and strategic planning			0.03		0.04	
Empathy and impulse control			-1.01		0.00	
	Thriving SC (3) compared to					
					High SC (4)	
Motivational drive					-0.18	
Organisation and strategic planning					0.00	
Empathy and impulse control					1.01	

* $p < 0.05$; ** $p < 0.01$; SC = self-compassion

From the comparisons, it appeared that the thriving and high compassion profiles would more likely include individuals with higher abilities to organise and plan strategically than the group that displayed low self-compassion. Those who were moderately self-compassionate had higher motivational drive, as well as organisation and strategic planning capabilities, than people in the high and the low self-compassion groups. No differences were detected between the different profiles with regard to their levels of impulse control and empathy.

A discussion of the findings reported above follows below.

Discussion

The aims of this study were to perform LPA on self-compassion scores of participants and to establish whether dimensions of executive functions would predict membership of self-compassion profiles.

The first aim was achieved with the LPA, which resulted in four self-compassion profiles: Profile 1 – low self-compassion; Profile 2 – moderate self-compassion; Profile 3 – high self-compassion; and Profile 4 – thriving self-compassion. Each of the profiles reflected unique self-compassion attributes of the individuals and will be described next.

Profile 1: Low self-compassion

This profile group only represented 9.4% of the sample population. From the results, it appeared that individuals that fell in this profile found it difficult to be loving, kind, and considerate towards themselves during times of suffering. They also found it difficult to accept their shortcomings in life and treat themselves with patience, tolerance, and understanding during difficult periods. These individuals tended to shy away from negative emotions, instead of accepting and understanding these emotions in an open and curious manner. Robinson et al. (2016) found that individuals with low self-compassion might perceive self-kindness and self-compassion as signs of weakness, which could hamper their performance in life, and that they viewed self-criticism as an alternative that they perceived as more beneficial in their circumstances.

Profile 2: Moderate self-compassion

This profile of individuals represented 22.8% of the sample population. As indicated in Figure 1, there was only one strong outlier item in this group, namely, Item SCS9: *When something upsets me, I try to keep my emotions in balance.* Individuals in this group may, in some instances, overidentify with their suffering and struggle to keep the negative emotions associated with the event in balance (Neff, 2016).

Profile 3: High self-compassion

Individuals in the high self-compassion profile represented 29.9% of the sample population. Mindfulness appeared to be the strongest self-compassion attribute in this group. These individuals tended to not allow negative events to destabilise them, and they experienced emotions that were not disproportionate in comparison to what had happened or was happening. They were inclined to view events that they experienced as challenging and painful from a balanced perspective, while treating themselves with patience, tolerance, and kindness amid these experiences (Galla, 2016; Germer & Neff, 2015).

Profile 4: Thriving self-compassion

The thriving self-compassion profile represented 37.9% – and the largest group – of the sample population. Self-kindness appeared to be the strongest self-compassion attribute in this group, followed by mindfulness, and then common humanity. These individuals tended to treat themselves with high levels of tenderness and kindness during times of pain and suffering. They also attempted to keep a holistic and balanced perspective, without harsh judgement and personal criticism (Smeets, Neff, Alberts, & Peters, 2014; Teper, Segal, & Inzlicht, 2013).

The second aim of this study was to determine whether factors of executive functions, identified by means of CFA, would predict self-compassion profile membership. The aim was achieved, and in this regard, the study found that the high and thriving self-compassion groups were mostly inclined to use organisation and strategic planning in their day-to-day

functioning. Surprisingly, in addition to organisation and strategic planning, those in the moderate self-compassion group were also more inclined to use motivational drive in their functioning. These results may suggest that the executive functions of organisation and strategic planning can contribute to or underpin features of improved self-compassion, especially pertaining to the elements of self-kindness and mindfulness. Individuals who have well-developed planning and organising skills have the competency to limit interferences (Pennequin, Sorel, & Fontaine, 2010) and inhibit unnecessary mind wandering to focus on the task at hand (Abikoff et al., 2013). This competency may be a mediating factor in fostering mindfulness, as the ability to wilfully pay attention to the present moment is one of the main pillars of mindfulness (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Mindfulness, in turn, supports self-kindness by, firstly, inviting one to turn towards one's painful ordeals and suffering and, subsequently, treating oneself with the necessary patience, tenderness, and compassion (Neff & Dahm, 2015).

It was particularly interesting that the moderate self-compassion group was the only group that tended to use motivational drive in its day-to-day functioning. Speculatively, this anomaly could possibly be associated with the one strong outlier in this group with a relatively low score compared to the scores of the other items. This item – *when something upsets me, I try to keep my emotions in balance* – tells us something definitive about this group. These individuals, instead of being emotionally unperturbed by events, tended to pay more attention to the negative emotions associated with the suffering or difficulty they were experiencing. This aspect could be the underlying factor associated with the executive function dimension of motivational drive, as motivational drive is fuelled by emotions and, most strongly, by negative emotions (Inzlicht, Bartholow, & Hirsh, 2015). One could then reason that this group of individuals were inclined to utilise negative emotions to fuel their motivational drive. This aspect needs further research.

Although the statistical analyses done in this study were successful in producing significant findings through which the research aims were achieved, the low reliability indices of some of the measuring instruments were puzzling. Unfortunately, measurement invariance testing was not done, and thus, it could imply that the respondents in this study did not interpret what was measured by the EFI in the same way conceptually as the group for which the measure was originally designed. Keeping in mind that about 90% of the participants in this research were mainly of African descent, for whom English was often the fourth language of use, it is possible that the EFI did not measure the conceptual construct among them in the same way as with the American and Western-oriented group, on whom the EFI was originally validated (Milfont & Fischer, 2010).

Although the aims of the study were successfully achieved, there were some limitations.

Limitations and Recommendations

Both the Executive Function Index and the Self-Compassion Scale are self-rated instruments that have some limitations, such as the possibility of positive response bias, where respondents are not always honest and try to portray themselves in the best positive light when responding to statements.

Although the scales were administered to a pilot group earlier, the possibility still existed that the content in some of the statements might have been unfamiliar to some respondents or that the phrasing of the statements could have influenced their responses. As was stated above, it was a limitation that measurement invariance testing was not done in this study. Further validation research with both the EFI and the SCS for use in South African populations is recommended. It is also recommended that the EFI and the SCS be translated into the main African languages used in South Africa.

Furthermore, there are demographic factors inherent in South Africa that could possibly play a role regarding executive functions and self-compassion, such as the socio-economic status of previously disadvantaged groups.

The respondents in this study only represented a small employment sector in the municipal system of South Africa, and therefore, generalisation of the results to the wider population should be done with caution.

This study identified specific executive function dimensions that underly and predict the development and expression of self-compassion. In the light of this, it is recommended that future research examine self-compassion in a more holistic manner, not only as a stand-alone construct and intervention, but as a construct that interacts with other cognitive, emotional, and physiological elements of the individual. These elements can either hamper or foster the healthy development and expression of self-compassion and even benefit or limit the effectiveness of interventions.

Conclusion

As far as could be determined, this was the first study to identify self-compassion profiles using latent profile analysis and to examine specific executive function dimensions as predictors of self-compassion. This study identified low, moderate, high, and thriving self-compassion profiles, each profile unique in its expression of the self-compassion elements of self-kindness, mindfulness, and common humanity. The current study also indicated that specific executive functions – in this instance, motivational drive, organisation, and strategic planning – predicted membership of self-compassion profiles. The results in this study are encouraging and open various other avenues for future research that can expand on the scientific knowledge of both self-compassion and executive functions, as well as the interplay that appears to exist between these two constructs. The research question of whether profiles of self-compassion could be identified by means of latent profile analysis and whether

dimensions of executive functioning would predict profile membership of the self-compassion profiles was answered by means of the statistical aims that were achieved.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

Keywords: common humanity, empathy, executive function, inhibition, mindfulness, motivational drive, organisation, self-compassion, self-kindness, strategic planning

This chapter provides a brief overview of the study and includes the conclusions, limitations in relation to the findings of this study, and recommendations for future research.

Conclusions

The aim of this study was twofold: firstly, to determine self-compassion profiles by means of latent profile analysis and, secondly, to determine whether the executive function dimensions of empathy, motivational drive, inhibitory control, organisation, and strategic planning would predict self-compassion profile membership.

Conclusions from the literature study

The literature study found that self-compassion was a constructive and supportive understanding and acceptance of oneself and one's circumstances during times of hardship, challenges, and suffering (Feldman & Kuyken, 2011). This self-related construct is comprised of three bipolar elements, namely, self-kindness versus self-judgement, mindfulness versus over-identification, and common humanity versus isolation (Neff, 2003a).

Individuals who have healthy levels of self-compassion are more loving and nurturing towards themselves during trying and difficult times than those whose levels are not healthy, and they do not try to ignore their pain and suppress the accompanying negative emotions; rather, they turn towards their suffering in a manner that is open and balanced and even with a sense of curiosity (Neff, 2003b). They also view their suffering and challenges in the broader social context of humanity, and they, therefore, do not perceive and experience their pain as isolated and unique (Neff, Rude, & Kirkpatrick, 2007).

Conversely, individuals with low levels of self-compassion struggle to cope with life's difficulties and suffering (Marsh, Chan, & MacBeth, 2018), and they are inclined to be harsh and critical towards themselves during these personal trials (Ehret, Joormann, & Berking, 2015). These individuals tend to overidentify with their personal pain and challenges and, as a result, are often caught up in the content of what is happening (Neff, 2016). In addition, they find it difficult to take a non-judgemental stance and show acceptance towards their

personal distress. Instead, they experience their painful ordeals and shortcomings as unique and segregated from the rest of humanity (Neff et al., 2007).

Executive functions was the second construct in this study and can be described as cognitive skills utilised under novel circumstances, which enable an individual to manage various behavioural, cognitive, and emotional processes in order to achieve a goal (Diamond, 2016; Gioia & Isquith, 2004; Vriezen & Pigott, 2002). There are three primary executive functions, namely, inhibition, cognitive flexibility, and working memory, and as these develop and interact, further executive functions emerge (Best & Miller, 2010). In this study, empathy, impulse control, motivational drive, planning, and organisation were examined as executive function dimensions. These are briefly described next.

Empathy is the competence to resonate with what another person is experiencing and feeling (Corradini & Antonietti, 2013). *Impulse control* is the cognitive skill to suppress automated responses in favour of a response that will be most appropriate and beneficial, taking the relevant contextual elements into consideration (Diamond & Ling, 2016). *Motivational drive* is an energising cognitive force that influences behaviour to either obtain a reward or avoid negative consequences (Botvinick & Braver, 2015) and is fuelled by emotion and, particularly, negative emotion (Harmon-Jones, Gable, & Price, 2013). *Planning and organisation* are functional and focused skills that enable an individual to strategically plan and determine what must be done, when it must be done, and what resources are required in order to achieve a goal. These cognitive skills enable one to organise all aspects pertaining to goal pursuit and achievement in a sequential and orderly manner (Meltzer & Krishnan, 2007).

Conclusions from the empirical study

This study identified four self-compassion profiles among participants in a South African context by means of latent profile analysis, whereas the literature study found that other researchers referred mainly to three different levels of self-compassion based solely on a total

self-compassion score, namely, low, moderate, and high self-compassion (Neff & Germer, 2018; Robinson et al., 2016). The four profiles identified in this study were low, moderate, high, and thriving self-compassion, and each profile revealed a unique set of self-compassion attributes pertaining to the subcomponents of self-kindness, mindfulness, and common humanity, which will be described next.

The study found that individuals in the low self-compassion profile might struggle to be loving, caring, and patient towards themselves when they were suffering or when faced with their own shortcomings. The moderate self-compassion profile group tended to have a slight struggle with keeping their emotions in balance when experiencing difficult times and setbacks in life. High self-compassion individuals revealed strong aspects pertaining to the mindfulness component of self-compassion. These individuals mostly tried to perceive trying and difficult situations from a sensible and balanced angle, and they did not overidentify with their personal suffering and challenges. The individuals in the thriving profile had self-kindness as their strongest self-compassion attribute and were mostly considerate, patient, and nurturing towards themselves when faced with their own inadequacies and pain.

In determining whether factors of executive functioning would predict self-compassion profile membership, this study noted that individuals in the high and thriving profile groups were more inclined to use organisation and strategic planning in their day-to-day functioning, whereas individuals in the moderate self-compassion profile were also inclined to use motivational drive in their functioning in addition to organisation and strategic planning. There were no significant indicators pertaining to empathy and inhibitory control.

These findings are supported conceptually when one considers that the cognitive processes of planning and organising require an individual to focus on the task at hand at the moment and to not become distracted by interfering stimuli or mind wandering (Pennequin, Sorel, & Fontaine, 2010). Similarly, the self-compassion element of mindfulness requires in-the-moment awareness of reality and not allowing oneself to be caught up in unproductive

rumination and mind wandering (Neff & Dahm, 2015). It may be that the cognitive ability to manage and suppress unnecessary mind wandering and to limit interferences from stimuli, which is core to planning and organising, is the underlying mediating aspect that contributes to the development of mindfulness in self-compassion. In addition, mindfulness is necessary to cultivate self-kindness, and therefore, it is not surprising that self-kindness also features strongly in the moderate, high, and thriving self-compassion profiles.

As mentioned, in addition to strategic planning and organisation, motivational drive also predicted moderate self-compassion profile membership. Individuals in this group were inclined to be more sensitive to their negative emotions when going through a difficult time. Bearing in mind that motivation is driven by emotions (Inzlicht, Bartholow, & Hirsh, 2015), it may be that the utilisation of the negative emotions to fuel motivation was also the mediating factor that contributed to the formation of the moderate self-compassion profile, and subsequently, motivational drive predicted membership of this profile.

The aims of this study were achieved, and the main finding was that four latent profiles of self-compassion were identified, of which profile membership was significantly predicted by organisation and strategic planning, less so by motivational drive, and not at all by empathy and impulse control. The research question was answered by these findings.

In light of the results above, it became clear that the construct of self-compassion had to be examined and appreciated not solely as a whole, but also in the context of the interaction and stimulation existing between the subcomponents. This study, furthermore, identified that certain executive function dimensions predicted self-compassion profile membership, and this interplay between the subcomponents of each construct warrants further research. The limitations and recommendations as a result of the findings in this study follow.

Limitations

Both the Executive Function Index (Spinella, 2005) and the Self-Compassion Scale (Neff, 2003a) are self-rated instruments that have some limitations, such as the possibility of

positive response bias, where respondents are not always honest and try to portray themselves in the best positive light when responding to statements. Another possible limitation was that English was not the home language of many participants, and therefore, the possibility existed that the content in certain of the statements might have been unfamiliar to some respondents or that the phrasing of the statements could have influenced their responses.

The respondents in this study only represented a small employment sector and unit in the municipal system of South Africa, and therefore, generalisation of the results to the wider population should be done with caution.

A more advanced statistical analysis of the relationships between latent profiles and auxiliary variables like the BCH method as described by Wang and Wang (2020) could have been useful to have more clarity on the link between latent variables and the auxiliary variables.

Recommendations

In assessing self-compassion, it is important to pay attention to the value of the subcomponents and how they contribute to the self-compassion profile of every individual (Neff, Whittaker, & Karl, 2017). This study suggests that self-compassion profiles are not solely based on total self-compassion scores, but rather on how every individual experiences the various elements of self-compassion, namely, self-kindness, mindfulness, and common humanity as in this study, but then also self-judgement, over-identification, and isolation as the negative components of self-compassion. The discovery of self-compassion profiles in this study is untrodden territory and beckons further research. It is, furthermore, recommended that the contribution of the individual self-compassion elements be taken into consideration in the development and implementation of self-compassion interventions, as they may contribute to the effectiveness of such interventions.

Previous studies have already identified positive correlations between the self-compassion and executive functions (Flook, Goldberg, Pinger, & Davidson, 2015; Martin,

Staggers, & Anderson, 2011; Shin, Black, Shonkoff, Riggs, & Pentz, 2016; Teper, Segal, & Inzlicht, 2013). This study also contributes to previous research through the identification of specific executive function dimensions, namely, motivational drive, organisation, and strategic planning, that underly and predict membership of self-compassion profiles. In this light, it is recommended that future research further examines the interplay between self-compassion and executive functions, specifically the possible causal relationship between these two constructs and their subcomponents, as this study suggests.

Both the Self-compassion Scale and the Executive Function Index seemed problematic pertaining to reliability in this study. In this regard, it is recommended that both of these scales be validated in a South African context.

The demographic information supplied by participants in this study indicated that respondents represented various indigenous cultures of South Africa, but this was not taken into consideration in the results of the study. It is, therefore, an important avenue that can be examined in future in relation to the development of executive functions and self-compassion (Lewis et al., 2009; Neff, Pisitsungkagarn, & Hsieh, 2008). There are also other factors inherent in South Africa that could possibly play a role in relation to the development of executive functions and self-compassion, such as the socio-economic status of previously disadvantaged groups, that call for further investigation (Sarsour et al., 2011).

Pertaining to the role of auxiliary variables in this study, it is recommended that the statistical method of Bolck, Croon and Hagenaars (BCH, in Wang & Wang, 2020) be used in future research to study the relationships between latent profiles and auxiliary variables.

Final Conclusion

The research question that motivated this study was convincingly answered by the research aims, which were achieved. The researcher is grateful to the participants in this study who completed the questionnaires given to them, albeit in a language that was not their mother

tongue. It was, therefore, exceptional that the majority of them showed high to thriving levels of self-compassion.

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