Exploring Self-Care and Its Associations with Burnout, Vitality, and
Academic Goal Achievement in University Students

by

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Abstract

Interest in self-care has risen in the past years with little direct research on the subject. This thesis sought to clarify the concrete behaviours that define self-care and the construct's potential impact on academic goal achievement. Three pilot studies (total $n = 798$) compiled a list of 12 self-care behaviours to represent the construct. Review of existing research suggest that these behaviours can impact physical and psychological well-being. A final study ($n = 95$) explored the effects of self-care in undergraduate students over a university semester. Results found that the frequency of self-care is associated with increased feelings of vitality, and is negatively correlated with feelings of burnout. Frequency of self-care did not predict academic goal achievement.

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self-care has risen in popularity in the recent years. Across the world, Google searches about self-care has nearly quadrupled over the past decade, with an estimate of about 74,000 searches per month. Results for these queries are similarly plentiful, with a cursory search on Google returning nearly 1.6 billion results. For comparison, a search of “baking” retrieves nearly 1.5 billion results. Across university campuses, self-care has been frequently advertised and promoted in partner with counseling services (e.g., providing useful online resources, book recommendations, workshop on self-care strategies). Notably, the medicine branch of Northwestern University has even officially incorporated self-care into its curriculum as a core competency that students must possess by graduation (“Personal Awareness & Self-Care”, n.d.). Numerous signs point to the rising interest in self-care and the belief that it is helpful for achieving the life that individuals want.

However, despite this rise in topical popularity, there still exists some confusion regarding what self-care should involve. To illustrate, the queries most related to self-care according to Google Trends are “what is self-care” and “how to self-care” in Canada and the United States respectively. This lack of a concrete definition makes it difficult to assess the efficacy of self-care in facilitating desirable life goals, and if it does, the mechanisms through which it assists human functioning. This study seeks to understand what are the specific behaviours that make up self-care for the general population are and to evaluate the efficacy of self-care, as defined by these behaviours, in increasing the success of academic goal achievement for university students.

Part 1 – What is Self-Care

Within research, self-care has been traditionally studied almost exclusively in terms of the medical population (e.g., Dashiff, Bartolucci, Wallander, & Abdullatif, 2005; Denford, Taylor, Campbell, & Greaves, 2014; Forducey, Glueckauf, Bergquist, Maheu, & Yutsis, 2012). For example, whether the elderly or the people with long-term illnesses can address their daily needs independently (e.g., get dressed by themselves, take their medicine correctly). More recent papers are starting to shift self-care from its focus on physical well-being (e.g., Ball & Bax, 2002; Toobert & Glasgow, 1994; Jaarsma, Strömberg, Mårtensson, & Dracup, 2003) to take on a more holistic and preventive perspective. Specifically, the new definition of self-care incorporates psychological wellness (Beauchamp & Childress, 2001) and takes on the goal of supporting human flourishing rather than merely sustaining physical existence (Keyes, 2007; Wise, Hersh, & Gibson, 2012).

To the extent of my knowledge, three existing articles have sought to clarify the specific elements of this new self-care by creating a scale or a concept map. Two of these studies looked to past literature for guidance. Dorociak, Rupert, Bryant, and Zahniser (2017) acknowledge the multidimensionality of self-care and used existing literature to capture 80 possible items that measure self-care. These items were then further curated by 3 experts and sent to 1500 psychologists in the state of Illinois. A final 21-item Professional Self-Care Scale emerged, with 5 factors: Professional Support, Professional Development, Life Balance, Cognitive Strategies, and Daily Balance. Santana and Fouad (2017) sought to provide a measure of self-care for doctoral students studying psychology. They asked 28 doctoral trainees in counseling and clinical programs to dichotomously rate the items of the Self-Care Assessment Work Sheet

(SCAW; Saakvitne, Pearlman, & Abrahamson, 1996) in terms of whether the item is clear and related to self-care. The rated items were then refined by 7 judges. Three factors emerged from the resulting 48-item scale: Cognitive-Emotional-Relational, Physical, and Spiritual.

The remaining, and most recent, study utilized a more individual-based approach to defining self-care. Ayala and Almond (2018) collected responses from 390 female psychology graduate students on what behaviour they engage in for self-care. The responses that were rated as the most important were then grouped into six clusters: Physical Wellness, Relaxation and Stress Management, Hobbies, Interpersonal Relations, Self-Compassion, and Outdoor Recreation.

These articles provide a foundation to answer the question of “what is self care” and “how to self care”. They illustrate a construct that is multidimensional and suggest that engagement in self-care should be conceptualized as the aggregation of multiple behaviours. More specifically, self-care might best be understood in terms of the six clusters that emerged from the concept mapping with psychology graduate students (Ayala & Almond, 2018). Items from the other two studies can reasonably be grouped into one of these clusters, with the exception of the more professionally oriented aspects of the Professional Self-Care Scale (e.g., “I participate in activities that promote my professional development”).

However, a significant limitation of these articles is the focus on psychology professionals and graduate students in clinical or counseling programs. These populations are service providers whose main concern is burnout from providing emotional and human support to clinical or near-clinical clients. The general population may experience different levels of stress and challenges (e.g., psychology graduate students report higher burnout and lower vigor than healthy employees, Swords & Ellis, 2017). Furthermore, psychology students and

professionals are given information on maladaptive behaviours or cognitive patterns that the general population would not have. The concept of self-care within these two population may differ – especially given that individual judgement is incorporated into identifying the self-care behaviours. Moreover, although these scales demonstrate overlap, there remains significant disparities. A separate analysis with the general population is needed to confirm the generalizability of these findings. For this thesis, a series of pilot studies were conducted to determine the specific behaviours that laypeople associate with self-care.

I chose to use the initial steps of prototype analysis (Cantor, Mischel, & Schewartz, 1982) as inspiration to guide the preliminary investigation. The prototype approach perceives concepts as organized around their most prototypical form (e.g., an apple is a quintessential fruit), which then blurs into less prototypical examples (e.g., a tomato, while still technically a fruit, is a less archetypal example), which then fades into non-members (e.g., spinach). It achieves this understanding by several steps. Firstly, it asks the participants to list features or examples of the construct of interest. Second, these examples are curated for duplicates (i.e., common examples between participants) which are then presented to a new group of participants to judge the representativeness of each example for the construct of interest. Following these two initial steps, prototype analysis uses various methods to examine the strength of the cognitive connections between the representative features or examples and the construct of interest. Similar to the method used by Ayala and Almond (2018), this approach emphasizes the knowledge of the target population rather than imposing the understanding of experts. For the purposes of this investigation, I will use only the first two steps of the prototype analysis to determine the most representative behaviours of self-care.

Part 2 – The Impact of Self-Care on Academic Performance¹

The purpose of this thesis is to examine the assumption that self-care would be beneficial for university students in terms of their academic pursuit. Through 3 pilot studies, described later in this thesis, I compiled a list of 12 most representative self-care behaviours to operationalize as self-care. The following literature review examines whether this conceptualization of self-care can achieve the purpose of self-care. Specifically, I review existing evidence on how each behaviour might or might not facilitate personal well-being, build adaptive resources, and ultimately contribute to personal goal pursuit. Due to the similarities between the results of my pilot studies and that of the concept mapping study (Ayala & Almond, 2018), I will be borrowing their categories to help organize my review.

I operationalized personal goal pursuit and achievement in terms of academic achievements in recognition of the university undergraduates that I will be recruiting for my main study. Based on self-reports of personal goals, university students overwhelmingly state academic performance as one of their most prioritized goals. It is reasonable to expect that if self-care is to facilitate human flourishing and personal goal pursuit, it will help undergraduate students achieve their personal academic performance goals. The following literature review will examine how might the individual self-care behaviours contribute to academic achievement for undergraduates.

¹ The specific behaviours examined in this section are based on the results of the pilot studies (starting page 26). This section is moved to here to avoid confusion in terms of what knowledge is available in the existing literature.

Interpersonal Relations

Each of the existing self-care scales and conceptualization include items for fostering and maintaining relationship (SCI, Santana & Fouad, 2017), or explicit note to spend time with people whom one enjoys (Ayala & Almond, 2018; Dorociak, Rupert, Bryant, & Zahniser, 2017). In accordance with these existing articles, my pilot studies found that people perceive “*Spend time with people I enjoy*” as a self-care activity. Decades of observational and empirical evidence support this implied causal relation between social relationships and physical and psychological health (e.g., Holt-Lundstad, 2018; House, Landix, & Umberson, 1988; Leigh-Hunt et al., 2017; Uchino, 2009; Umberson & Montex, 2010). For example, social isolation – the objective state of having few social contacts - predicts greater risk for cardiovascular disease (Caspi, Harrington, & Moffitt, 2006) and lower antibody response to influenza (Pressman et al., 2005). Feelings of loneliness – the perception that one’s social relationships are inadequate or unfulfilling - predict greater depressive symptoms in adolescents (Brown, Munn, & Rotenberg, 2010), young adults (Wei, Russel, Zakalik, 2005), and older adults (Cacioppo, Hawkley, & Thisted, 2015). A recent meta-analysis even found that the impact of social relationships on mortality can be greater than the impact of certain well-known lifestyle behaviours (e.g., exercise, smoking, alcohol consumption; Holt-Lundstad & Smith, 2010).

The intuitive emphasis on “enjoyable” interpersonal relations is also in line with existing research. Merely increasing the frequency of social contacts or developing more social relationships may not be necessarily beneficial for physical and psychological well-being. While positive social relationships are proposed to buffer against stress (the social buffering hypothesis; Cohen & Hoberman, 1983; Gunnar, 2017; Malecki & Demaray, 2007) and has been found to promote positive outcomes in various life domains (e.g., university adjustment, Wintre & Yaffe,

2000; Tao, Dong, Pratt, Hunsberger, & Pancer, 2000; Rodríguez, Tinajero, & Páramo, 2017; job performance, AbuAlRub, 2004; Carmeli, Ben-Hador, Waldman, & Rupp, 2009; Thompson, 2005), the increase of negative social interactions is associated with increased likelihood of having anxiety and mood disorders (Bertera, 2005) and can act as a source of strain (e.g., Brooks & Dunkel Schetter, 2011; Rook, 1984)

A recent paper evaluated the consistent evidence of a positive relationship in the impact of social relationships on well-being and proposed a theoretical framework for how social support facilitates human thriving (Feeney, & Collins, 2015). In this perspective, there are two functions of positive close relationships: 1) help the individual overcome adversities and emerge stronger because of the experience and 2) facilitate the encounter of positive environments where the individual can pursue positive opportunities and challenges. This theory acknowledges that poor-quality relationships can negatively impact the individual and emphasizes that healthy close relationships, as characterized by responsive and sensitive support behaviours (e.g., expressing understanding and acceptance, giving encouragements, celebrating successes), is needed to support thriving. With optimal sensitivity and responsiveness, individuals are postulated to use close others as safe haven or secure base. In other words, this theory acknowledges the role that social support plays as a type of resource reserve for the individual (e.g, Conservation of Resources Theory, Hobfoll, Freedy, Lane, & Geller, 1990; the buffering model, Cohen & McKay, 1984). Individuals either seek comfort and support from the relationship in times of difficulty or feel encouraged to take opportunities and explore because of the existence of a reliable source of comfort and support (Feeney, 2004; see also Attachment Theory Bowlby, 1988). Subsequently, in helping to overcome adversities, close relationships facilitate thriving by providing fortification, which is the development of capacities to handle difficult times. In

helping to facilitate exploration, close relationships encourage the motivation to pursue challenges, provide social reinforcements, and provide advice and assistance as needed.

Likewise, the Self-Determination Theory (SDT; Ryan & Deci, 2017a) – a theory of motivation and goal pursuit as foundations of human thriving – postulates positive relationships as one of three core basic psychological requirements for sustainable and healthy human functioning. The basic psychological need (BPN) for relatedness, the need to feel genuinely connected and engaged with close others and social groups, is satisfied in the presence of positive interpersonal relationships and frustrated in their absence. Within the SDT framework, each BPN (relatedness, competence, and autonomy) by itself is a necessary but not sufficient cause of human thriving (Ryan & Deci, 2017b). Consequently, existing studies frequently examine the satisfaction and frustration of BPN as a whole. Research show that satisfaction of BPN predicts desirable outcomes such as greater motivation for goal pursuit (e.g., Baard, Deci, & Ryan, 2006, Deci et al., 2001), greater success with achieving goals (e.g., Baard, Deci, & Ryan, 2006), and greater sense of energy and vitality (Baard, Deci, & Ryan, 2004; Deci et al., 2006; Weinstein & Ryan, 2010). On the other hand, frustration of BPN is linked with negative outcomes such as burnout (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011), psychological distress (e.g., Legate, DeHaan, Weinstein, & Ryan, 2013), and maladaptive forms of goal pursuit (e.g., Ryan, Sheldon, Kasser, & Deci, 1996; Vansteenkiste, & Ryan, 2013).

This non-exhaustive review of the literature on positive interpersonal relationship suggests the self-care behaviour “*Spend time with people I enjoy*” will facilitate human thriving and potentially goal pursuit. Specifically, studies have found the presence of social relationships to buffer against negative physical and psychological outcomes. A recent theory is proposed

based on existing literature that positive social relationships predict human flourishing. These postulations are in line with the hypothesized effects of BPN satisfaction and frustration in the SDT framework.

Physical Wellness

The importance of healthy physical behaviour is acknowledged in all three scales and maps. In my operationalization of self-care, the most important health behaviours are specified as *“Eat a healthy meal”*, *“Exercise for at least 10 minutes”*, and *“Drink water and stay hydrated”*. There is substantial evidence that each of these behaviours is helpful for physical well-being. Exercise and healthy eating are also suggested to be related to better cognitive functioning in school-aged children and potentially older adults.

Dietary components have been long known to significantly impact human health. To cite some well-known examples: over-consumption of trans fatty acids is associated with increased risk for cardiovascular diseases (e.g., Remig et al., 2010); excessive consumption of sugar is linked to diabetes and many adverse effects similar to alcohol (e.g., Lustig, Schmidt, & Brindis, 2012). Under-consumption, or malnutrition in the forms of inadequate intake of energy or micronutrients, is a predictor of susceptibility to illness, disease, and mortality (e.g., Bourke, Berkley, Prendergast, 2016; Chandra, 1997; Murray & Lopez, 1997). On the other hand, healthier choices can lead to improvement in physical health. For instance, the Mediterranean Diet is predictive of reduced risk factors of cardiovascular diseases (Martínez-González et al., 2015). Overall, the accumulated research suggests, in accordance with the definition of physical needs and the intent of self-care, that remaining within a range of healthy food consumption is a prerequisite for optimal physical well-being.

Dietary choices can also impact mood and potentially cognitive functioning. Certain unhealthy diets are associated with greater depressive symptoms (e.g., Beezhold, Johnston, & Daigle, 2010; Breymeyer, Lampe, McGregor, & Neuhouser, 2016; Psaltopoulou et al., 2013; Rogers, 2001). In school-aged children, healthier diets can predict improved academic performance (e.g., Hoyland, Dye, & Lawton, 2009; MacLellan, Taylor, & Wood, 2008; Tandon et al., 2016). Little evidence was found of the academic benefits of healthy diet on university students. Research observe that the Mediterranean Diet is associated with less cognitive decline in older adults (Psaltopoulou et al., 2013). Clinical trials are on-going to investigate this relationship (e.g., Valls-Pedret et al., 2015).

The benefits of physical exercise for physical well-being has been similarly well established in existing literature. Adequate exercise predicts decreases in the likelihood of cardiovascular concerns (e.g., Lear et al., 2017; Wahid et al., 2016), diabetes (e.g., Aune, Norat, Leitzmann, Tonstad, & Vatten, 2015; Colberg et al., 2016), various other chronic diseases (e.g., Bauman, 2004; Haskell, Blair, & Hill, 2009), and mortality (e.g., Myers et al., 2004). In addition, physical activity leads to improved physical capacity and functioning across life-span (e.g., Janssen & LeBlanc, 2009; Penedo & Dahn, 2005; Warburton et al., 2006).

Physical activity can likewise improve cognitive performance. For instance, in older adults, physical activity is protective against cognitive decline (processing, memory, and cognitive functioning, Chang et al., 2010; Deary et al., 2006). In children, the positive impact of physical activity on cognitive performance can translate into better academic performance (e.g., Fedewa & Ahn, 2011; Lees & Hopkins 2013; Tandon et al., 2016) and mental health (e.g., Ahn & Fedewa, 2011; Biddle & Asare, 2011). However, the research on physical activity during young adulthood is more focused on the predictors for physical activity behaviours than that of

their consequences for cognitive performance. Given the bias against publishing non-significant result (Francis, 2012), the absence of published research on this topic may suggest a lack of significant findings. Researchers have also proposed that young adulthood may be a time of peak cognitive performance (Salthouse & Davis, 2006) and the effect of exercise may be too small to further improve cognitive abilities during this period in an individual's life (Hillman, Erickson, & Kramer, 2008).

Water is a biological necessity for the human body. Given the availability of water in much of North American society, intense and clinical dehydration is unlikely in the average population and, moreover, is beyond the scope of self-care. However, even moderate dehydration, 2% to 5% water loss in body weight, can cause significant impairments such as decreased endurance performance (Chevront & Kenefick, 2014) and cognitive function as well as motor skills (e.g., Hillyer, Menon, & Singh, 2015). Mild dehydration, defined as the loss of 1% to 2% body weight in water, is also suggested to adversely impact feelings of vigor, fatigue, and task difficulty in young women (Armstrong et al., 2012) and vigilance and feelings of fatigue in young men (Ganio et al., 2011). Research was not forthcoming with the frequency by which people become dehydrated in daily life, as water loss is dependent on numerous environmental and personal factors. Experimental manipulations used to induce mild dehydration from a starting state of full hydration has included 40 minutes of fasting walking on an inclined treadmill (5.6 km/h, 5% grade) in a moderate to warm room ($27.6 \pm 0.8^{\circ}\text{C}$) for up to three sessions within 5 hours (e.g., Armstrong et al., 2012). Some evidence suggests that non-clinical dehydration may have significant presence in the average population. One study found that the prevalence of mild to moderate dehydration, as measured by the density of their urine, is around 31.9% in a sample of 430 American university athletes prior to their exercise sessions

(Magee, Gallagher, & McCormack, 2017). This finding replicates the results of previous studies with low sample sizes (e.g., Gibson, Stuart-Hill, Pethick, & Gaul, 2012; Thigpen, Green, & O’Neal, 2014). The limited generalizability of the current evidence must be acknowledged: The majority of the experimental research on mild to moderate dehydration were conducted with low sample sizes using within-subjects design, and focuses on physical exertion (Grandjean & Grandjean, 2007). Overall, evidence suggests that the maintenance of physical and cognitive performance in daily life may benefit from actively remembering to drink water and stay hydrated.

In summary, “*Eat a healthy meal*”, “*Exercise for at least 10 minutes*”, and “*Drink water and stay hydrated*” are behaviours that can contribute significantly to physical well-being. The absence of physical illness allows for greater resource allocation to the pursue of personal goals and desires. Increased physical capacity may likewise add physical resources to the individual’s ability for goal pursuit. These ideas are in accordance with the meta-analytic finding that physical health is positively associated with work performance (Ford, Cerasoli, Higgins, & Decesare, 2011). The finding that healthy eating and physical exercise are predictive of improved academic performance in school-aged children (e.g., Tandon et al., 2016) also corroborate these ideas, though the effect may not be significant in adults.

Self-Compassion

Self-compassion was only mentioned in one previous self-care conceptualization – the concept mapping by Ayala & Almond (2018). Replicating their finding, “Practice self-acceptance” and “Be mindful and/or paying attention to my body” emerged as important self-

care behaviours in my participant sample. These two behaviours were both mentioned by the female graduate psychology student sample of the concept mapping.

Self-acceptance, defined as the “positive evaluation of oneself and one’s past life” (Ryff & Keyes, 1995, p.720), is one of the six core factors of psychological well-being. In the clinical psychology literature, the term may also be used to refer to an openness to experience the present moment (Cavanagh, Strauss, Forder, & Jones, 2014). This second definition is closely related to the concept of mindfulness, which is defined as “paying attention in a particular way, on purpose, in the present moment and non-judgmentally” (Kabat-Zinn, 1994, p.4). Both definitions may be used by the general population. Thus, I will attempt to review research findings related to both conceptions of self-acceptance.

Self-criticism is associated with negative psychological well-being and diminished goal pursuit. Studies find self-criticism to be one of the contributing factors to depression (e.g., Blatt D’Afflitti, & Quinlan, 1976; Ingram, 2003) and to be associated with increased susceptibility to psychopathology more generally (e.g., Blatt & Luyten, 2009). Self-criticism is also postulated to impact feelings of basic psychological need satisfaction and frustration under the SDT framework (Vandenkerckhove, Brenning, Vansteenkiste, Luyten, & Soenens, 2019). Specifically, the authors proposed that self-critical individuals may be more likely to feel autonomy frustration because they pressure themselves into activities in their attempt to meet their own unrealistic standards. Likewise, higher self-criticism is found to be associated with lower sense of self-efficacy (e.g., Dunkley, Zuroff, & Blankstein, 2003; Powers, Milyavskaya, & Koestner, 2012; Stoeber, Hutchfield, & Wood, 2008), which may translate as competence frustration. Lastly, people high in self-criticism have been shown to use maladaptive interpersonal perceptions and respond to interrelationship conflicts with heightened

defensiveness (e.g., Dunkley, Zuroff, & Blankstein, 2003). These behavioural patterns are also shown to lead to needs frustration (e.g., Shahar, Henrich, Blatt, Ryan, & Little, 2003). Consequently, research indicate that basic psychological need frustration is predictive of decreased psychological well-being (Ryan & Deci, 2017c) as well as diminished motivation for personal goal pursuit (e.g., Shahar, Henrich, Blatt, Ryan, & Little, 2003). More directly, self-criticism is linked to maladjustments after encountering failure in their goal pursuit (e.g., Mendelson, & Gruen, 2005; Stoeber, Hutchfield, & Wood, 2008) and less self-perceived goal progress (e.g., Powers, Koestner, Zuroff, Milyavskaya, & Gorin, 2011; Powers, Milyavskaya, & Koestner, 2012). Given that failures are inevitable throughout the goal pursuit journey, these findings suggest that individuals high in self-criticism would have more difficulty in their goal pursuit. Consequently, to the extent that “practice self-acceptance” may counter self-criticism, I expect this self-care behaviour to alleviate these negative effects on psychological well-being and goal pursuit.

This hypothesis is corroborated by findings on self-compassion. Self-compassion is repeatedly found to be associated with adaptive adjustments in the face of failure. Specifically, self-compassion has been associated with lesser degree of fear of failure (e.g., Neff, Hsieh, & Dejitterat, 2005), greater motivation to master their weaknesses (e.g., Breines & Chen, 2012; Neff, Hsieh, & Dejitterat, 2005), and greater resilience in the face of set-backs (e.g., Hope, Koestner, & Milyavskaya, 2014; MacBeth, & Gumley, 2012; Neff, Kirkpatrick, & Rude, 2006). Outside of reactions to failures, higher self-compassion predicts better adjustments to difficult life situations (e.g., MacBeth, & Gumley, 2012; Neff, & McGehee, 2009) and better psychological well-being in general (e.g., Barnard, & Curry, 2011; Neff, Kirkpatrick, & Rude, 2006; Zessin, Dickhäuser, & Garbade, 2015). If individuals are successful in increasing self-

compassion by what they describe as practicing self-acceptance, this self-care behaviour will be expected to benefit psychological well-being and goal pursuit.

The experiencing of the present moment and mindfulness have similarly been associated with psychological well-being. A meta-analysis on intensive mindfulness training, in the form of mindfulness-based stress reduction (MBSR), found a medium-sized effect on both psychological and physical well-being (Grossman, Niemann, Schmidt, & Walach, 2004). Meta-analysis of less intensive mindfulness activities, in the form of self-administered interventions of mindfulness and self-acceptance, show smaller and likewise significant effect in improving depressive and anxiety symptoms (Cavanagh, Strauss, Forder, & Jones, 2014). Immediate instructions to engage briefly in mindfulness and self-acceptance activity has also been shown to induce positive effects such as stress reduction, recovery from negative moods and better emotional regulation (Keng, Smoski, & Robins, 2011).

The research on mindfulness and goal pursuit or performance is less clear. Mindfulness has been linked to factors that may contribute to better goal pursuit, including enhanced self-regulation (e.g., Friesen & Hofman, 2016), increased persistence in a difficult task (e.g., Feldman, Dunn, Stemke, Bell, & Greeson, 2014; Evans, Baer, & Segerstrom, 2009), reduced burnout in teachers and nurses (e.g., Cohen-Katz, Wiley, Capuano, Baker, Kimmel, & Shapiro, 2005; Roeser et al., 2013), and better cognitive function (e.g., Zeidan, Johnson, Diamond, David, Goolkasian, 2010). Successful self-regulation and persistence are predictive of goal achievement. Reduced burnout would help maintain devotion and motivation for the selected goal. Cognitive function, as well as better physical and psychological well-being, would be expected to contribute to goal pursuit as increased resources that the individual can draw upon.

Relaxation and Stress Management

Three behaviours can be grouped under the Relaxation and Stress Management: “Take time to be by myself and relax”, “Get enough sleep”, and “Work on my goal”. The first two corresponds to participant responses in the concept mapping study itself. The third behaviour is included in this group due to its similarities with items in this group such as “Get work done in advance”, “Stay on top of work”.

Stress maintains a constant presence in life, in both proximal (e.g., the task at hand) and distal (e.g., worries about the future) forms. These psychological stressors can enhance the likelihood of both psychological deterioration (e.g., onset of depression, Kendler, Karkowski, & Prescott, 1999; severity of depression, Tennant, 2002; the animal model of depression, Willner, 1997) and physiological degeneration (e.g., Dougall & Maum, 2012; Juster, McEwen, & Lupien, 2010). For university students, general stress and academic stress are found to have a small negative effect on grade point average (Richardson, Abraham, & Bond, 2012). Evidence suggest that stress management interventions in occupational settings can alleviate the negative impacts of stress (Richardson & Rothstein, 2008). One of the effective components of these interventions include relaxation. In the case of depression, stress may be acting partially through a decreased ability to return stress to baseline levels after encountering a stressor (e.g., Burke, Davis, Otte, & Mohr, 2005). Relaxation, with its capacity to regulate stress levels, may act as a barrier on this pathway between stress and depression.

The behaviour “Take time to be by myself and relax” brings to mind the idea of withdrawal from social interactions, which may be motivated by both social avoidance (i.e., the avoidance of social situation) and solitude seeking (i.e., the pursuit of solitude). Solitude, in the sense of selecting to be alone but not being limited from social connection, has been described as

“a state characterized by disengagement from the immediate demands of other people—a state of reduced social inhibition and increased freedom to select one's mental or physical activities” in a review on this concept by Long and Averill (2003). The summary of the benefits of solitude includes feelings of increased freedom to behave and think in various ways, bringing about creativity, the experience of feelings of intimacy and spirituality. This behaviour may also satisfy feelings of autonomy through the decision and enactment of isolating oneself, as well as from the increased feelings of freedom that is observed. These positive feelings may function as a respite from stress for the individual and allow them to feel more prepared to take on their next task.

According to recent estimates by Statistics Canada, about 30% of Canadians aged 18 to 64 have less than the recommended amount of sleep and about 50% experience some trouble going to or staying asleep (Chaput, Wong, & Michaud, 2017). These estimates suggest that a significant portion of university students struggle with “getting enough sleep”. Lack of sleep has been shown to be detrimental to cognitive abilities such as working memory, decision making skills. Long-term sleep deprivation is associated with mood disorder, decline of cognitive ability. Consequently, it is expected that by “getting enough sleep”, the individual protects their capacity to engage in goal pursuit. Longitudinal data on American students (N = 3549) found that chronic sleep deprivation is associated with lower grade point average and decreased likelihood of graduation (Chen & Chen, 2019).

Direct actions that are construed as working on personal goals are expected to contribute to goal achievement over time. However, the self-report of this behaviour may be subject to bias depending on the importance of the goal and the ease of the goal. Specifically, goals that are worked on more may be goals that are more important to the individual and thus they spend more time on them, or goals are more time consuming for the individual to work on and thus

spend more time on. Consequently, self-report of this behaviour would correlate differently with the achievement of each goal depending on the nature of these goals. For university students, the most commonly reported goals are academic, health, and exercise. Based on the importance of goals, I would expect these goals to be closer to achievement the more the student reports behaviour “work on my goal”. Alternatively, university students dedicate most of their time to academic work (e.g., participating in classes, doing homework) and this behaviour may most strongly predict academic achievement.

Hobbies and Recreational Projects

“Do something I enjoy” is a vague behaviour to the extent that what an individual may enjoy depends on their interests and inclinations at any given time. In the interest of applying a theoretical review for why this behaviour might contribute to the overall well-being and the person’s goal pursuit, I propose that intrinsic motivation and intrinsic enjoyment, as best defined in the frame work of self-determination theory (Deci & Ryan, 2017), should be taken as the key elements of this behaviour. Specifically, “do something I enjoy” will be operationalized as behaviours that are autonomously enacted and desired because of the joy that the individual receives from the behaviours themselves. In addition, the potential effects of elevated mood and happiness in relation to goal achievement will be examined as they are likely the results of “doing something I enjoy”.

According to SDT, people are naturally interested in “activities that provide novelty and challenge” as they strive for “optimal level of stimulation” (Deci & Ryan, 2010). This behaviour may reflect an inherent human desire to switch out of activities that do not provide the right level of novelty and challenge. Within the SDT framework, intrinsic motivation is fostered by

satisfaction of the need to feel competent and autonomous. Furthermore, it is reasonable to assume that, by doing something they enjoy, individuals are satisfying their psychological needs for competence and autonomy. The desire to switch to a more intrinsically motivated activity echoes one explanation proposed for self-control depletion; after engaging in strenuous activities that frustrate basic psychological needs or are motivated by external pressures or consequences, the individual wishes to engage in something that is intrinsically motivated (Milyavskaya & Inzlicht, 2018). Following this idea, “doing something I enjoy” may be a recovery mechanism to avoid frustrating important psychological needs.

Intrinsically motivated activities can also lead to flow states. Flow states are described as “the subjective experience of engaging just-manageable challenges”, which includes phenomena such as a sense of autonomous competence and losing track of time (Nakamura & Csikszentmihalyi, 2014). These experiences are described to be delicately balanced because challenges that are too difficult can bring about anxiety and self-consciousness, and challenges that are too easy bring about boredom. From this perspective, “doing something I enjoy” may reflect a desire to move away from non-optimal challenges and to seek out flow states. The frequency of flow state experiences predicts commitment and achievement in the activity that brings these experiences (Csikszentmihalyi, Abuhamdeh & Nakamura, 2014), which can subsequently translate to better adaptation to challenges in other domains of life (Schmidt, 2000). Flow states may also be a symptom of a flourishing life as they describe experiences of optimal human functioning. In this sense, “doing something I enjoy” would be essential to encouraging human flourishing.

The positive affect that can result from “doing something I enjoy” has also a variety of benefits. A review of literature reveals examples such as greater attentional capacity

(Fredrickson & Branigan, 2005), increased creativity (Isen, Daubman, & Nowicki, 1987), better immune function (Davidson et al., 2003), and resilience to adversity and promotion of psychological growth (Fredrickson, Tugade, Waugh, & Laukin, 2003). According to the Broaden-and-Build Theory, positive emotions facilitates behavioural and mental flexibility and contributes to building personal resources through increased exploring and learning (Fredrickson, 1998). Based on these evidences, it is reasonable to propose that “doing something I enjoy” can contribute to human flourishing in general.

Other

The remaining two self-care behaviours, “clean my living environment” and “clean and groom myself”, did not fit with any of the categories identified in previous literature. Based on a non-exhaustive review of the research on human desire for cleanliness, the importance of these behaviours may be rooted in my evolutionary aversion to potential contaminants and the social norms that subsequently evolved. Physically, cleaning decreases chances of illness by removing bacteria and viruses. Psychologically, self-cleaning has been shown to reduce feelings of shame and guilt and can increase happiness (Tang et al., 2017). There may also be a general preference for tidy environments; a study on undergraduate students found that they feel more comfortable in a tidy environment than in a messy environment (Radomsky & Rachman, 2004). Literature on tidiness and organization suggest cleaning up living environments can be potentially beneficial for decision making. For example, the presence of visual distraction predicts inaccuracy when recalling details of a previously watched video (Perfect, Andrade, & Syrett, 2011), and for people who score high in conscientiousness a messier environment can increase anxiety (Radomsky & Rachman, 2004) and inaccuracy (Mateo, Hernandez, Jaca, & Blazsek, 2013). In

summary, these cleaning behaviours may help goal achievement through preventing illnesses, modifying some specific moods, and potentially increasing accuracy in certain circumstances.

Based on the goal of facilitating human flourishing, self-care should have measurable impact on individual's behaviours and achievements. Through the above review, the individual components of self-care are shown to be associated with improvements in human functioning. However, the value in promoting self-care as an integrated whole of all these behaviours is less clear; it should be examined whether general engagement in these behaviours can facilitate human functioning to the extent that it is able to predict better goal achievement.

Part 3 - Burnout and Vitality

The highlight of self-care is its capacity for managing personal resources in such a way as to prevent a decrease in performance at work or in general life and to feel that they have the energy to engage in daily life. Literature would suggest that these phenomena may be alternatively known as the prevention of burnout and the facilitation of subjective vitality. Burnout is conceptualized as the depletion of one's physical and psychological resources (Freudenberger & Richelson, 1980, p.16) which can cause declines in both physical and psychological health (e.g., Kim, Ji, & Kao, 2011; Salvagioni et al., 2017), and importantly, decrease in objective performance (Taris, 2006). Subjective vitality is defined as "having physical and mental energy...that one can harness or regulate for purposive actions" (Ryan & Deci, 2008).

Even though burnout was originally identified in and conceptualized for the human service domain, the decades since have expanded its applicability to various roles including university students. In students, burnout consists of "exhaustion due to school demands, cynical,

and detached attitude towards one's school [or the meaning of school], and feelings of inadequacy as a student" (Salmela-Aro, Kiuru, Pietikainen, & Jokela, 2008). It is negatively associated with students' academic performances (May, Bauer, & Fincham, 2015; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). If self-care is able to prevent or alleviate burnout, then it may positively influence the grade students are able to achieve.

Existing research, mostly done with non-student populations, suggest that burnout is indeed alleviated with certain behaviours discussed in the previous section. Meta-analysis done with work burnout found that social support negatively predicts burnout (Halbesleben, 2006). In health-care workers, self-report of physical activity is associated with lower levels of burnout two years later (Jonsdottir, Rodjer, Hadzibarjramovic, Borjesson, & Ahlborg, 2010). Self-compassion and mindfulness training predicted lower levels burnout in teachers in the following school semester (Roeser et al., 2013). The negative relationship between burnout and mindfulness is also found in high school athletes, with positive affect shown to act as the mediator (Gustafsson, Davis, Skoog, Kentta, & Haberl, 2015). These findings are a preliminary summary of the state of research on burnout prevention and intervention and suggest that self-care can alleviate burnout.

Subjective vitality is conceived as having positive mental and physical energy to strive towards achievements that the individual wants to accomplish and is predictive of more productivity (Ryan & Frederick, 1997). It is reasonable to extrapolate that cultivation of this feeling would encourage academic achievement due to the availability of more energy to pursue this important goal. Indeed, a study found that subjective vitality is positively correlated with academic adjustment in university, of which one aspect is academic achievement (Fini, Kavousian, Beigy, & Emami, 2010). In working adults, who would have work performance

instead of academic achievement as the important goal, a study found that subjective vitality is positively correlated with work performance (Dureuil, Forest, & Courcy, 2013). Even though a firm causal relationship between subjective vitality and academic achievement is not yet established empirically, the postulations around subjective vitality suggest its existence.

Health and psychological well-being are thought to be the prerequisites of subjective vitality. Positive social interactions are theorized to help energize individuals and promote feelings of subjective vitality (Ryan & Deci, 2008). This idea is in accordance with the literature on how social support can act as an adaptive resource and support human thriving (e.g., Feeney, & Collins, 2015). In a review of stressors that impact health, variations in diet, exercise, and sleep patterns are determined to have direct impacts of subjective vitality (Rozanski, Blumental, Davidson, Saab, & Kubzansky, 2005). Engaging in intrinsically motivated activities or basic psychological need satisfying activities can increase subjective vitality (e.g., Gagne, Ryan, & Bargmann, 2003; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). It would be expected that self-compassion behaviours can protect feelings of subjective vitality by decreasing psychological need frustration and maintain positivity. Based on these evidences, it would reasonable to hypothesize that self-care would improve subjective vitality.

Pilot Study 1 – Eliciting behaviours deemed as self-care

The purpose of this study is to compile a pool of behaviours that are considered to be self-care. An online survey was designed to ask participants to list up to 15 behaviours of what they do for self-care. Participants were also asked about the aims and features of self-care.

Method

A total of 210 Amazon Mechanical Turk (MTurk) workers responded to the online survey. Mturk is a crowdsourcing platform hosted by Amazon to recruits workers for tasks requiring human intelligence. The average equivalent hourly wage workers receive would be about 1.40 USD per hour (Horton & Chilton, 2010). Monetary compensation and interest are two major motivations for workers (Paolacci, Chandler, & Ipeirotis, 2010). Data collected from MTurk has been comparable to offline samples (e.g., Buhrmester, Kwang, & Gosling, 2011; Paolacci et al., 2010) and this platform has been increasingly used by social science researchers (Buhrmester, Talaifar, & Gosling, 2018). The survey was advertised as inquiring about self-care and invited interested participants to answer. It was made clear that they will receive 0.30 USD for about 10 minutes of their time before they start the survey. Participants that completed the study within 2 minutes, or with duplicate geolocations and IP addresses, or gave irrelevant answers were removed, leaving 184 participants. The majority of participants identified as White (82%), with 7.6% Black participants, and 4.7% Asian participants. About half of the participants were female (50.7%). About half of the participants were between 21 – 34 years old (51.2%).

Procedure

Participants were introduced to the study with the following instruction: “In this section, I am interested in the common instances of self-care. Please give yourself several minutes with these questions and type out **as many answers as you can think of.**” They were then given 15 text entry boxes and asked to list the features of self-care: “What features would you use to define self-care? Imagine that you are explaining the idea to someone who has no experience with self-care behaviours. Include the obvious. You can list up to 15 features.”. Next, they were

asked in the same format to list the behaviours they do for self-care: “What self-care behaviors do you like to engage in? Due to space constraints, you can only list up to 15 self-care behaviors.”. Finally, they were asked about the aims they have for doing self-care: “What do you think self-care should accomplish? (e.g., feel refreshed, energize, long-term health, etc)”

Results

A total of 1394 unique responses were collected for self-care behaviours. A research assistant condensed the examples based on duplicates or similar terms (e.g., multiple participants gave the behavior “exercise” while other participants proposed “workout”, “fitness”, etc). Based on this new list, any term that was not repeated at least twice was eliminated, resulting in 102 common behaviours of self-care. A similar procedure was followed with the lists of features and aims. Unexpectedly, a majority of the features proposed for self-care is worded in terms of behaviours (e.g., “brush teeth”, “yoga”) and is also given as the behaviours of self-care. This finding suggests that self-care is predominantly conceptualized as behaviours. In the interest of being comprehensive, 7 features of self-care that were a form of behaviour (e.g. the actionable “de-clutter” as opposed to the more abstract “love”) and did not appear as a response in behaviours of self-care were included in the final list, resulting in 109 common behaviours self-care. The data for aims of self-care were not analyzed for the purposes of this study.

Several behaviours are very similar and related to each other. For example, “going for a walk”, “running”, “biking”, as well as other items, can all fall under the realm of “exercise”. Similarly, “taking care of my teeth”, “facial cleaning and care”, “moisturizing” and other behaviours can be components of “personal cleaning and grooming”. The relationships between these behaviours need to be probed to see if asking about the higher-level behaviours

(“exercise”, “personal cleaning and grooming”) will encompass inquiries about the more specific behaviours.

Pilot Study 2 – Representativeness of self-care behaviours

According to the prototype method, participants should be able to judge whether a feature or element is central to the construct of interest. Moreover, there should be significant agreement among these judgements. The first section of this second study sought to examine whether a new group of participants would consider the 109 self-care behaviours gathered from Study 1 as representative of self-care. The second section seeks to investigate whether participants will naturally think of the specific behaviours they do for “exercise” and “personal cleaning and grooming” when asked about these broad behaviours.

Method

I recruited 500 MTurk participants through the same method as pilot study 1; this number of participants was selected to account for the potential issue of bots providing nonsensical answers in online surveys (Stokel-Walker, 2018). Participants were compensated 0.30 USD when they finish the survey. After clearing out the participants who failed the attention checks or completed the survey in under 2 minutes, 467 participants were retained. Most of the participants identified as White (79.7%), with 10.5% who identified as Black or African American, and 8.6% who identified as Asian. There were slightly more female participants (55.9%) than male. The mean age of the participants was 38.25 years ($SD = 11.96$).

In the first section of the survey, participants were asked to rate a first list of behaviours in terms of “How **representative** of self-care are the following activities?” and then another list

of behaviours in terms of “How **central (or important)** to self-care are the following activities?”. Both items were on a scale of 1 (Not at all representative) to 7 (Extremely representative). Due to the large number of examples, each participant is only presented with 28 randomly selected behaviours and 1 attention check item (e.g., “Select “Very (7)” for this item”). An algorithm ensured that each behaviour was selected a similar number of times overall. After deleting 33 participants who took less than 2 minutes to complete the survey and those who failed the attention checks, each behaviours was evaluated by at least 120 participants.

In the second section of the survey, participants are asked to indicate on a scale of 1 (Strongly disagree) to 7 (Strongly agree) their agreement with 3 statements. Whether the higher-level behaviour includes the more specific behaviour (e.g., “exercise” includes “going for a walk”). Whether the specific behaviour is different from the higher-level behaviour (e.g. “going for a walk” is different from “exercise”). Whether they would think of the specific behaviour if they were instructed to do the higher-level behaviour (e.g., If I were instructed to “exercise”, I will think of “going for a walk”). Only behaviours that fall under “exercise” and “personal grooming and cleaning” were examined. For each higher-level behaviour, two attention check items were included (e.g., “studying” is different from “exercise”) and two validation items were included to see how participants rate less related behaviours (e.g., “spending time in nature/outdoors” is different from “exercise”). See Appendix 1 for all the behaviours investigated in this section.

Results

The correlation between the representativeness and centrality (importance) scores of each behaviour was high ($r = .941$). The average of these two scores was used to determine how

generally relevant each behaviour is for self-care. A score of 5 or above was used as the cut-off, resulting in 73 behaviours that were selected as relevant for self-care. The behaviours matched many of the items identified in the concept mapping (Ayala & Almond, 2018), suggesting a similar conceptualization of self-care between psychology graduate students and the general population. Only one unique group of behaviours, personal cleaning and grooming, was not identified or related to any items in the concept mapping.

Data also suggest that asking about higher-level behaviours encompasses more specific behaviours. Participants agreed that the higher-level behaviour includes the more specific behaviour (e.g., “exercise” includes “going for a walk”; cut-off at 5 - agree). Attention check items scored below 3.02 on this item. Validation items scored between 4.34 and 4.57 on this item, except for “going for a walk” in the category “exercise”, which scored 6.14. Data indicated each specific behaviour is not different from their corresponding higher-level behaviour (e.g. “going for a walk” is different from “exercise” – cut-off at 3 – disagree). Attention check items scored above 5.28 on this item. Validation items scored between 3.93 to 4.60 on this item, except for “going for a walk” in the category “exercise”, which scored 2.94. Lastly, participants reported that they will think of the specific behaviour if they were instructed to do the higher-level behaviour (e.g., If I were instructed to “exercise”, I will think of “going for a walk”; cut-off at 5 - agree). Attention check items scored below 2.51 on this item. Validation items scored between 4.01 to 4.11 on this item, except for “going for a walk” in the category “exercise”, which scored 5.42. These data suggest that asking about both higher-level and specific behaviours can be redundant, and that higher-level behaviours capture the specific behaviours. The behaviour “going for a walk” is suggested to be part of “exercise” and will be treated as such

in future studies. After reducing the specific behaviours, 58 self-care behaviours are selected for further analysis.

Pilot Study 3 – Frequency of Self-Care Behaviours and Probing the structure of self-care

A total of 58 behaviours is too many potential predictors to examine at once. I expect that when people engage in self-care, they will engage in the behaviours that are most representative of self-care. I also expect that self-care is an action that requires daily or weekly performance, rather than once per month or once per year frequency. Therefore, this third study seeks to observe the frequency with which each of the 58 behaviours is engaged in, and investigate whether engagement in select few behaviours will be enough to predict engagement in the general self-care behaviours.

Method

The 25 most relevant self-care behaviours were selected for further analysis. Items that are similar to each other (e.g., “ensure I have proper nutrition” and “eat healthy” and “make a healthy choice”) were condensed into one item (e.g., “eat a healthy meal”) or only one item was selected (e.g., the more highly rated “practice self-acceptance” was selected and therefore “practice self-compassion” was not). Certain behaviours that may be specific to a particular population (e.g., “take my medication”, “use drugs”) were excluded. A final 12 behaviours were selected as the most relevant self-care behaviours that might predict general engagement in self-care (see Appendix 2).

Amazon MTurk workers who self-reported to be older than 18 and are currently attending university (n = 147) were recruited to complete an online survey through the same way

as previous pilot studies. They were compensated 0.5 USD when they complete the survey. They were asked how often they do each of the self-care behaviours: once per month or less, 2-3 times per month, once per week, 2-3 times per week, 4-6 times per week, once per day, 2-3 times per day, or 4 or more times per day. They were first asked about the 12 most relevant behaviours and the full 58 behaviours. They were also asked to evaluate how actionable each behaviour was: “If you were given the below statements as instructions, you will know exactly what to do” on a scale of 1 (Strongly disagree) to 7 (Strongly agree).

An exploratory factor analysis was conducted to see whether the frequencies of engaging in self-care behaviours are related to some underlying construct. If self-care is, as conceptualized in the general use of the term, a general construct that these behaviours fall into, I expected to see these frequencies to load onto a single latent variable. Alternatively, the self-care behaviours may be better conceptualized in terms of categories, as existing scales proposed (e.g., Dorociak, Rupert, Bryant, & Zahniser, 2017; Santana & Fouad, 2017). I may expect each behaviour to fall into one of the categories proposed by Ayala and Almond (2018).

Results

The median was used to determine the frequency with which each behaviour is performed. Most of the 58 behaviours were performed most frequently on a weekly basis (the exception being the items “use drugs (including alcohol, cigarette, marijuana)”). More importantly, the average frequency with which the 12 most relevant behaviours were performed highly correlates with the average frequency of engaging in the other 46 behaviours ($r = .85$). These data support the usage of the shorter list of self-care behaviours as a measurement of engagement in self-care. Future studies may use these behaviours as a starting point to

investigate the effects of self-care. Participants also reported that all 58 behaviours were actionable, scoring 5 (agree) or above.

There are significant similarities between the 12 behaviours from my studies and the items reported in the concept mapping with psychology graduate students (Ayala & Almond, 2018). One or more behaviours mapped onto the categories Physical Wellness, Hobbies, Interpersonal Relations, and Self-Compassion. No behaviour mapped onto Outdoor Recreation – the most relevant behaviour was “spend time in nature or outdoors” at rank 28 and was therefore excluded from consideration at the initial step – and Rest and Stress Management only had one behaviour that is similar to the behaviours found in the concept mapping (i.e., “do something I enjoy”).

Two factor analyses were ran using the MPlus software package. Analysis 1 tested the hypothesis that these behaviours are indicative of an underlying tendency to engage in self-care, all 12 behaviours were allowed to load onto a self-care latent variable (see Figure 1). Analysis 2 tested the hypothesis that behaviours may be better grouped in terms of the categories proposed by Ayala and Almond (2018), using multiple latent variables (see Figure 2). Each latent variable is based on one of the proposed categories that the behaviours fall under. If only one or less behaviour fall under a given category, it is grouped into an “Other” category. The models were ran using WLSMV to account for the categorical nature of the frequency measures.

In analysis 1, the results suggested that the 12 behaviours do not load onto 1 latent variable. Likelihood ratio $\chi^2(54) = 148.56$, $p < 0.001$ suggests that there is enough evidence to reject null hypothesis. This result suggests the model is not a good fit. The approximate fit indices corroborate the chi-squared test. RMSEA = 0.110, 90% CI = [0.089, 0.131], not smaller than 0.05. CFI = 0.865, not greater than 0.95. Only SRMR = 0.065, is smaller than 0.08. The

data suggest that the functional understanding of what self-care is, in the form of representative self-care behaviours, does not reflect a latent self-care construct. This result suggests that self-care may be better understood as a verbal amalgamation of several different constructs, or as a verbal shorthand for a selection of distinct behaviours.

Figure 1. Factor analysis model 1. All behaviours were allowed to load directly onto a self-care latent variable.

Analysis 2 examined the possibility that self-care refers to an amalgamation of several constructs, specifically the categories proposed by Ayala and Almond (2018). The results indicated that the 12 behaviours did not load onto those categories. Likelihood ratio $\chi^2(48) = 136.25$, $p < 0.001$ suggests that there is enough evidence to reject null hypothesis. This result suggests the model is not a good fit. The approximate fit indices corroborate the chi-squared test. RMSEA = 0.112, 90% CI = [0.090, 0.135], not smaller than 0.05. CFI = 0.874, not greater than 0.95. Only SRMR = 0.063, is smaller than 0.08.

Figure 2. Factor analysis model 2. Behaviours were grouped in terms of the categories proposed by Ayala and Almond (2018).

These results suggest that self-care as conceptualized by the general population is a versatile construct and includes many different activities. Furthermore, these results suggest that the 12 behaviours are assessing many different aspects of self-care and provides a broad definition for what is self-care. Based on this analysis, the measurement of self-care may be best done through finding the average frequency by which participants perform all 12 behaviours.

Main Study – Effect of self-care on academic goal achievement

Using the 12 behaviours identified as the most representative self-care behaviours to operationalize self-care, I seek to examine whether self-care can predict better personal goal pursuit. Given that I will be recruiting university undergraduates, I operationalized personal goal achievement as academic achievement. Based on the above literature review, I hypothesize that students who engage in more frequent self-care will have more success in meeting their personal grade goals. Furthermore, I expect that they will experience less burnout and greater vitality throughout the semester.

Method

Three online surveys were collected throughout the Winter semester of 2019 as part of a larger study. The first survey was conducted within the first month of the semester. The second survey was sent out a week after the first survey. The third survey was conducted a month after the first survey. A “Time” variable will keep track of the distance from the start of semester in terms of days for each survey.

Each survey collected information on how often the student engages in each of the 12 self-care behaviours within the past week, their burnout in the academic domain (Oldenburg

Burnout Inventory; Reis, Xanthopoulou, & Tsousis, 2015), and state vitality (Subjective Vitality Scale; Ryan & Frederick, 1997). The first survey also collected their academic goal in terms of the grade point average they are aiming for in this semester. The students were then asked to consent to the collection of their semester grades at the end of the semester. Of the students who gave the consent, their semester grades were collected from Carleton university's registrar office.

Analyses

Goal achievement. Achievement of semester grade goals will be calculated by the discrepancy between goal and actual semester grade point average (GPA). When GPA is lower than the original goal, the discrepancy will show a negative score equivalent to goal GPA subtracting real GPA. When GPA is higher than the goal, there will be a positive score.

Self-care. Based on the results of Pilot 3, the approximate frequency of engagement in self-care will be calculated by averaging engagement scores across all 12 behaviours.

Vitality and burnout. Vitality scores and burnout scores will be calculated for each participant at each time point. A correlation analysis will examine these scores. If the correlation is high ($r \leq -.75$) then the two scores will be combined to form a single score: The score for burnout will be subtracted from the vitality score.

A regression analysis will examine the general effect that self-care may have on academic goal progress. A composite score will be formed by averaging self-care frequency across all three surveys to predict academic goal progress. Then, multilevel analysis (Mixed-Effects Models in SPSS) will be used to examine the overall and between-participant effects of self-care on vitality and burnout at each time point. Finally, I will conduct a mediation analysis

using PROCESS (Hayes, 2012) to examine the potential role that vitality and burnout may play between self-care and academic goal progress; self-care, vitality, and burnout will be averaged across the three time points.

In acknowledgement of the progressive stress that students experience over the semester, a multilevel analysis will examine the potential effects of time as a predictor of self-care frequency, vitality, and burnout individually. As an additional exploratory analysis to examine whether self-care is particularly beneficial during a stressful time, the “Time” variable will be added, as a moderator, to the multilevel models that examine the effect of self-care on vitality and burnout.

Results

Participants

A total of 112 participants participated in the study. They were recruited through first- and second-year psychology courses and received course credits in return for completing each survey. Credits were not withheld or deducted if the participant chose not to provide their grade information. Only 95 provided consent to retrieve their semester grades and were used for analysis. Ten participants were between 30 to 68. Excluding them, the average age was 19.95 ($SD = 2.31$). The majority was female (75.5%). There were first-year students (66.3%), second-year students (14.9%), third-year students (10.6%), fourth-year students (5.3%), and students who have been in school for five years or more (2.1%). There were White (54.7%), Black (17.9%), Hispanic (4.2%), Asian, (18.9%), Aboriginal (3.2%), and other ethnicities (5.3%).

Descriptive

Regression analysis found that the average frequency of self-care at survey 2 was significantly lower than at survey 1 (mean difference = .24, $p = .017$) and 3 (mean difference = .25, $p = .024$). However, because participants began the study at different times throughout the semester, there were significant overlaps between the survey time ranges. A more reliable way to examine change over the semester would be to examine the frequency of self-care in relation to the number of days from the start of the semester. Further regression analysis found a negative quadratic curve of self-care frequency over the semester ($b = -.00026$, $t(153.5) = -2.24$, $p = .026$, 95%CI[-.00048, -.00003]). There was no linear nor quadratic effect of time on vitality and burnout. On average, participants underachieved their semester grade goals.

Table 1. Descriptive statistics of all variables.

	n	Mean	Standard Deviation	Cronbach's Alpha
<i>Survey 1</i>				
Self-Care	94	4.41	0.96	.82
Vitality	94	3.93	1.36	.92
Burnout	94	3.93	0.89	.84
<i>Survey 2</i>				
Self-Care	79	4.24	1.01	.86
Vitality	79	3.92	1.29	.92
Burnout	79	4.00	0.84	.85
<i>Survey 3</i>				
Self-Care	62	4.48	1.06	.88
Vitality	62	4.01	1.39	.92
Burnout	62	3.97	0.82	.83
<i>Semester Average</i>				
Self-Care	95 ¹	4.36	0.89	-
Vitality	95 ¹	3.98	1.20	-
Burnout	95 ¹	3.96	0.84	-
Goal Achievement	90 ²	-1.67	2.45	-

¹One participant answered surveys two and three but did not answer survey one.

²One participant is excluded as outlier because they gave a GPA goal of 1 and achieved 8.75, resulting in an extreme 7.75 goal achievement score; it seems to be a case of typing error.

Table 2. Correlation between vitality and burnout in each survey.

Survey 1	Survey 2	Survey 3
-.47** (n = 94)	-.55** (n = 79)	-.39** (n = 62)

** $p < .01$ (2-tailed).

Table 3. Correlations table of semester averages, with all 90 participants who completed at least one survey and provided their semester grade goals and actual grades.

	Actual GPA	Goal Achievement	Self-Care	Vitality	Burnout
Actual GPA	-	.83**	.02	.01	-.10
Goal Achievement		-	.08	.05	-.02
Self-Care			-	.48**	-.38**
Vitality				-	-.52**
Burnout					-

One participant with a 7.75 goal achievement score is excluded as outlier. ** $p < .01$ (2-tailed), $p < .05$ (2-tailed).

Table 4. Correlations table of semester averages, with the 59 participants who completed all three surveys and provided their grades.

	Actual GPA	Goal Achievement	Self-Care	Vitality	Burnout
Actual GPA	-	.83**	.08	.16	-.07
Goal Achievement		-	.018	.26*	-.07
Self-Care			-	.52**	-.31*
Vitality				-	-.45**
Burnout					-

Two participants did not provide their final grades and one outlier with a goal achievement of 7.75 is excluded. ** $p < .01$ (2-tailed), * $p < .05$ (2-tailed).

Table 5. Descriptive statistics of within-participant variables.

	Minimum	Maximum	Intra-class correlation
Self-Care (n = 95)	1.25	7.00	0.61
Vitality (n = 95)	1.00	7.00	0.66
Burnout (n = 95)	1.68	6.50	0.76
Self-Care (n = 59)	1.25	7.00	0.67
Vitality (n = 59)	1.00	7.00	0.69
Burnout (n = 59)	1.68	6.50	0.77

Main Analyses

Using data from all 90 participants who answered at least one survey and provided their grades correctly, single predictor regression analysis was conducted with academic goal achievement and the participant's semester average frequency of engaging in self-care

behaviours. The results suggest that self-care frequency did not significantly impact academic goal achievement ($R^2 = .004$, $F(1,89) = .32$, $p = .57$, $\beta = .06$). The same analysis with the 59 participants who completed all three surveys returned the same result ($R^2 = .033$, $F(1, 57) = 1.94$, $p = .17$, $\beta = .18$).

Multilevel analyses examined the relationships between self-care frequency and vitality and between self-care frequency and burnout at each survey time point. With data from all 95 participants who answered at least one survey, self-care significantly predicted subjective reports of vitality ($b = .42$, $t(217.4) = 5.02$, $p < .001$, $95\%CI[.25, .58]$), but predicted reports of burnout with marginal significance ($b = -.10$, $t(210.8) = -1.19$, $p = .06$, $95\%CI[-.20, .003]$). For the 62 participants who completed all three surveys; self-care significantly predicted subjective reports of vitality ($b = .36$, $t(171.7) = 3.80$, $p < .001$, $95\%CI[.17, .55]$), but did not significantly predict reports of burnout ($b = -.08$, $t(172.6) = -1.39$, $p = .17$, $95\%CI[-.20, .03]$).

Finally, a mediation model examined the four variables together. With all 90 participants who provided goal achievement data, average frequencies of self-care over the semester predicted both average vitality ($b = .65$, $p < .001$) and average burnout ($b = -.24$, $p = .02$). Academic goal achievement was not predicted by self-care ($b = .18$, $p = .59$), vitality ($b = .02$, $p = .92$), nor burnout ($b = -.07$, $p = .80$). With the 59 participants who completed all three surveys and provided their grades, average frequencies of self-care over the semester predicted average vitality ($b = .69$, $p < .001$) but not average burnout ($b = -.24$, $p = .08$). Academic goal achievement was not predicted by self-care ($b = .12$, $p = .35$), vitality ($b = .38$, $p = .14$), nor burnout ($b = -.07$, $p = .80$).

Exploratory Analyses

Time (i.e., days from the first day of the semester) did not significantly moderate the relationship between frequency of self-care and vitality ($b = .00066$, $t(182.2) = .18$, $p = .86$, $95\%CI[-.0065, .0078]$). Nor did time significantly moderate the relationship between frequency of self-care and burnout ($b = .00042$, $t(159.3) = .20$, $p = .84$, $95\%CI[-.0037, .0046]$).

When self-care frequency is person-centered and both the centered and the observation-specific variables are entered into the model, semester average frequency of self-care predicted feelings of vitality at each survey point ($b = .68$, $t(89.2) = 5.53$, $p < .001$, $95\%CI[.44, .93]$) but fluctuations from the personal average did not predict feelings of vitality at each survey point ($b = .16$, $t(134.8) = 1.49$, $p = .14$, $95\%CI[-.05, .37]$). Similarly, semester average frequency of self-care predicted feelings of burnout at each survey point ($b = -.37$, $t(86.3) = -4.09$, $p < .001$, $95\%CI[-.54, -.19]$) but fluctuations from the personal average did not predict feelings of burnout at each survey point ($b = .014$, $t(130.6) = .24$, $p = .81$, $95\%CI[-.10, .13]$).

Discussion

In this thesis, I conducted four studies to investigate how might self-care behaviours impact academic goal achievement. In pilot studies 1 – 3, I examined how the general population conceptualize self-care as specific behaviours and compiled a short-list of the 12 most representative self-care behaviours. Previous efforts were made to concretely define self-care with psychology professionals and psychology graduate students (Ayala & Almond, 2018; Dorociak, Rupert, Bryant, & Zahniser, 2017). The current studies expanded the work to the general population and presented a potential way to measure self-care. Importantly, the results showed that self-care is a conglomerate of different behaviours and that the general population

has a similar conceptualization of it as more expert populations (e.g., psychology professionals and students). Literature review based on the short-list of self-care behaviours provide preliminary support for the potential efficacy of self-care.

In response to the proliferation of advice to engage in self-care by universities, the main study examined how the frequency of self-care might impact academic grade achievement. Data suggest that the average frequency of engaging in self-care behaviours during a university semester did not significantly predict academic goal achievement. Frequency of self-care in the past week significantly predicts greater feelings of vitality, but only marginally or insignificantly predict lower reports of burnout. At the semester level, average frequency of self-care was related to both greater average feelings of vitality and lower average feelings of burnout. Academic goal achievement was not significantly predicted by self-care, vitality, nor burnout. These results suggest that self-care is capable of what it advertises to do: it facilitates “having physical and mental energy...that one can harness or regulate for purposive actions” (Ryan & Deci, 2008) and may prevent the depletion of physical and psychological resources (i.e. burnout). However, the extent to which self-care does so, at least for first and second year university students, is not enough to significantly impact personal goal attainment in the form of semester grades.

These findings broadly correspond with the existing literature. Individual self-care behaviours have been repeatedly found to benefit physical or psychological health, or improve vitality and burnout, while much less evidence exists for relationships between these behaviours and academic performance. Positive interpersonal relationships are postulated to encourage human flourishing in general, but a direct link between such relationships and grades was not found in the non-exhaustive literature review. Behaviours that encourage physical wellness

predicted academic performance in children (e.g., Tandon et al., 2016), but it has also been proposed that the cognitive benefits from such behaviours might be too small for young adults at the peak of their cognitive capacity (Hillman, Erickson, & Kramer, 2008). Self-compassion can protect against the negative psychological consequences of failures and obstacles in goal-pursuit, but it was not directly predicting academic goal achievement. Behaviours that were grouped under relaxation and stress management were suggested to decrease feelings of stress rather than predict academic performance; only the behaviour “work on my goal” was expected to directly contribute to the participant’s academic goal in the current study. Hobbies and recreational projects were expected to increase positive affect rather than directly influence academic performance. Lastly, the two cleaning behaviours were not directly associated with academic performance.

The current results potentially suggest that self-care is robustly associated with vitality but not burnout. In existing literature, vitality has been conceptualized as a measure of subjective well-being or a form of eudaemonic well-being (Ryan & Deci, 2001) while burnout represents a depletion of physical and psychological resources. In the current study, burnout specific to the academic domain was measured. An interpretation could be that self-care increases physical and psychological resources generally but is less effective in addressing domain-specific exhaustions and negative attitudes. Alternatively, the lack of change in burnout throughout the semester may be indicating that another measure of burnout should be used. For example, the Maslach Burnout Inventory tracked increasing burnout over a semester in academic exhaustion, cynicism, and efficacy (Galbraith & Merrill, 2012) but found that exhaustion increased only in the fall semester and not in the winter semester. The current study was conducted in the winter semester and the OLBI measures exhaustion and disengagement. Additional studies are needed to elucidate how

self-care is related to burnout and the implications of what that relationship might mean for self-care as a construct.

The lack of significant correlation between academic goal achievement and burnout echoes this need for more data. Goal achievement is highly correlated with actual semester GPA in this sample. Previous research found that burnout significantly predicted GPA within a semester (May, Bauer, & Fincham, 2015), and predicted the number of exams passed (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). In the current data, however, burnout was not directly correlated with actual GPA. One potential reason might be the different measures of burnout used in these studies (i.e., School Burnout Inventory and Maslach Burnout Inventory). Another potential reason might be the amount of first-year university students (66.3%) sampled in the current study. Comparatively, only about 20% of the sample by May and colleagues (2015) were first-year students. Because first-year students may still be adjusting to the university environment, the relationship between their grades and burnout and vitality may be different from more senior students. Given that the OLBI specifically measures exhaustion and disengagement from school, first-year students may not yet experience a degree of burnout that would impact their academic performance. However, it should be noted that years in school was not a moderator to the relationship between burnout and GPA in the previous study (May, Bauer, & Fincham, 2015). More data are needed to clarify the current results.

Exploratory analyses examined the effect of time on self-care. The results suggest that students engaged in slightly more self-care in the middle of the semester than at the beginning or end and that the effect of self-care on vitality and burnout did not change over the semester. Within-person analyses suggest that the effect of self-care is more dependent on general personal average than on changes in self-care frequency from time to time. One potential interpretation is

that self-care requires sustained practice over time to be effective. Alternatively, the natural variation in self-care engagement is too small to have a significant impact.

Lastly, the directions of the correlations between variables are in accordance with the hypothesized relationships. Self-care is insignificantly but positively correlated with goal achievement, which suggests that it is at least not detrimental to the pursuit of personal goals. For instance, it is a prevalent idea to trade sleep for time spend on studying or working. Inversely, one potential worry regarding self-care is that it takes similar resources away from pursuing personal goals. The current data does not support this worry. Vitality is positively correlated with goal achievement, as expected from literature. The significant correlation for participants who completed all three surveys may be reflective of the positive relationship between vitality and academic adjustment (Fini, Kavousian, Beigy, & Emami, 2010). Potentially, participants with greater vitality adjusted better to their first-year in university and are thus more capable of pursuing their academic goals. Furthermore, vitality and burnout are significantly negatively correlated, as expected given that one measures the feelings of energy while one measures the depletion of energy.

Limitations and Future Directions

Additional work is required to clarify the results of the current studies. The current results are limited by a small sample size that is comprised of mostly first-year university students. There might not be sufficient statistical power to uncover existing relationships. For instance, power analysis using G*Power indicates that 90 participants have 95% power to detect a medium effect size in single predictor linear regression, but only 26% power to detect a small effect size. The lack of a significant relationship between burnout and GPA may be partially due

to this issue. The sample is not representative of the experiences of more senior university students. First-year students, having just transitioned from high school, may not have the ability of more experienced students to accurately estimate their academic abilities in university setting. They may also be adjusting to new identities, social relationships, and their new independence (e.g., Hussey & Smith, 2010; Scanlon, Rowling, & Weber, 2007), which may further confound the data. Most importantly, the current sample allows for limited generalizability to the university student population due to its focus on first-year students in psychology courses.

A different measurement of burnout may provide further insights into the effects of self-care. Previous studies that indicated association between burnout and academic performance measured burnout using the Maslach Burnout Inventory – General Survey (MBI-GS), which measured Exhaustion, Cynicism, and Efficacy, and the School Burnout Inventory (SBI), which measured Exhaustion, Cynicism, sense of inadequacy. The Oldenburg Burnout Inventory used in the current study measured Exhaustion and Disengagement. The lack of replication of previous findings brings doubt to whether burnout is measured appropriately in the current study. Alternatively, different conceptualization of burnout may contribute to the lack of significant relationship in the current data. Future studies could explore whether specific components of burnout might associate with self-care while others do not. Interestingly, in the study using MBI-GS (Galbraith & Merrill, 2012), the Exhaustion subcomponent did not significantly change throughout the winter semester but did in the fall semester. Future studies may need to examine burnout in both Fall and Winter semester in case the unexpected stagnation in Exhaustion replicates.

Similarly, measuring academic goal achievement in more senior students, or examining alternative forms of goal progress, may better illuminate the impacts of self-care. As briefly

mentioned above, senior students may have more accurate estimates of their academic abilities because they are not adjusting to a new environment, and thus may provide a less erroneous measure of goal achievement. Alternatively, examining the subjective perception of goal progress and ease of goal pursuit might provide interesting insight into the impact of self-care. Current results suggest an association between self-care and subjective vitality, which may translate to association with better subjective experience of goal pursuit. Furthermore, other measures of goal achievement (e.g., in the domains of sports, work, or specific personal goals) are needed to more comprehensively explore the relationship between self-care and personal goal achievement; the current study only speaks to some of the association self-care has with academic goal pursuit in university.

The difference between engaging in individual self-care behaviours and engaging in self-care in general can be further explored. The current data shows that individual self-care behaviours tend to positively correlate with vitality and negatively correlate with burnout (see Appendix 3). There are a few negative correlations in the case of academic goal achievement (although none significant), suggesting that some self-care behaviours might have different relationships with academic goal pursuit than others. However, it should be kept in mind that these correlations are only exploratory. These correlations broadly reflect the existing literature; individual self-care behaviours are suggested to be helpful for psychological and physical well-being while the relationship with academic goal pursuit is uncertain. The main analyses describe an association between self-care and vitality and a correlation with burnout but provide no evidence that self-care is significantly associated with academic performance. As such, the current efforts cannot clarify whether general self-care should be recommended rather than

specific self-care behaviours or vice versa. Future studies need to examine this comparison more directly.

The high Cronbach's alphas observed for self-care behaviours across the three surveys were unexpected and prompt further examination. These results are contrary to the factor analysis in pilot study 3, which suggested that the behaviours do not correlate closely together. One potential reason for the difference is that university students may think about self-care behaviours differently than MTurk workers; due to the emerging popularity of self-care, students may think of self-care behaviours within the concept of self-care rather than individual behaviours like older individuals might. More data with both students and other populations are needed to explore the possibility of self-care as a latent construct, and the potential differences in how self-care behaviours are conceptualized by different populations.

Conclusion

This thesis explored the effects self-care may have on human functioning and personal goal pursuit. Self-care was operationalized as a list of 12 self-care behaviours through 3 pilot studies. Human functioning was operationalized as burnout and subjective vitality based on existing literature. Personal goal pursuit was operationalized as academic goal achievement for university students. The main study found that self-care is significantly associated with subjective vitality and significantly correlated with burnout. These results are in accordance with the general population's idea of what self-care should achieve. However, the current study cannot establish the direction of causality and the results should be constrained to university students taking first- and second-year psychology courses. The main study did not find evidence for self-care impacting academic goal achievement. To the extent that universities are promoting

self-care, the current results would suggest self-care may be associated with better psychological well-being in students but not direct improvements in their academic performance. Nonetheless, the current study provides important initial evidence that self-care can be measured in research and that it is associated with measurable differences in participants.

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Appendices

Appendix 1. Potential behaviours that can be grouped into a higher category.

Category	Item
Exercise	Going for a walk
	Running
	Swimming
	Doing an outdoor activity
	Biking
	Playing basketball
	Playing an instrument
	Thinking/introspection
	Doing yoga
	Spending time in nature/outdoors
Personal cleaning and grooming	Taking care of my personal hygiene
	Taking care of my teeth
	Taking care of my hair
	Taking a bath
	Facial cleaning and care
	Nailcare
	Doing laundry
	Doing my makeup
	Moisturizing
	Spa
	Wearing deodorant
	Pampering myself
	Cuddling with significant other
	Studying

* Red = attention-check items

*Orange = validation items

Appendix 2. Final list of 12 self-care behaviours

1. Drink water and stay hydrated
2. Eat a healthy meal
3. Clean and groom myself
4. Get enough sleep
5. Practice self-acceptance
6. Take time to be by myself and relax
7. Exercise for at least 10 minutes
8. Do something I enjoy
9. Spend time with people I enjoy
10. Work on my goal
11. Clean my living environment
12. Be mindful and/or paying attention to my
body

Appendix 3. Correlation table between individual self-care behaviours with vitality, burnout, and academic goal achievement.

	Vitality (n = 95)	Burnout (n = 95)	Goal Achievement (n = 90)
Drink water and stay hydrated	.26*	-.24*	.16
Eat a healthy meal	.20	-.33**	.23*
Clean and groom yourself	.26**	-.26*	.12
Get enough sleep	.39**	-.29**	.09
Practice self-acceptance	.37**	-.17	-.16
Take time to be by yourself and relax	.36**	-.30**	.05
Exercise for at least 10 minutes	.23*	-.19	.03
Do something you enjoy	.31**	-.19	.09
Spend time with people you enjoy	.23*	-.11	.05
Work on your goal	.43**	-.32**	.19
Clean your living environment	.39**	-.28**	-.13
Be mindful and/or pay attention to your body	.51**	-.43**	-.003

** $p < .01$ (2-tailed), * $p < .05$ (2-tailed).