A Gender-Based Perspective on the Relationship Between Subjective Age and Functional Independence Following Osteoporotic Fractures and Stroke

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"Aging is not lost youth but a new stage of opportunity and strength"

Betty Frieden, 1921-2006

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Abstract

Most developed countries determined that the onset of old age begins at the age of 65. The extended longevity of the population has brought about a growing interest in the aging process, as well as in the various ways people experience and perceive their aging. A growing body of research on old age has indicated that chronological age, which serves as an important marker for constitutional privileges, rights, social status, and responsibilities, is not a very potent predictor of health and psychological outcomes in the second half of life.

Ample research has produced an alternative predictor of health outcomes - subjective age – the way a person perceives his or her age. Subjective age has since replaced chronological age as a stronger predictor of health and psychological outcomes among older adults, especially community-dwelling old persons.

The current study sets out to take the research of subjective age and its relationship with health outcomes one step further by examining the reciprocal relationship between subjective age indices and the functional independence of older adults who undergo rehabilitation following stroke or hip fracture (total joint arthroplasty).

To the best of my knowledge, very few longitudinal studies have actually examined reciprocal relationships between subjective age indices and measurable clinical outcomes using a cross-lagged model in order to gauge the reciprocal relationships. Moreover, no research known to me has examined the moderating effect of gender and age awareness on these reciprocal relationships, as well as the mediating effect of well-being on the subjective age-health outcomes relationships.

To do so, the current research performed cross-lagged analyses using AMOS, testing the reciprocal effects of subjective age and functional independence. The analyses simultaneously tested the effect of subjective age at admission on functional independence at discharge, as well as the effect of functional independence at admission on subjective age at discharge. The model further tested the auto-regressive effects of subjective age and functional independence (i.e., the effect of subjective age at admission on subjective age at discharge, as well as the effect of functional independence at admission on functional independence at discharge).

The main study variables were subjective age and functional independence. Functional independence was measured at admission to the rehabilitation ward and at discharge by the Functional Independence Measurement test (FIM). Four dimensions of subjective age: "mental age", "physical age", "look age", and "behave age", as well as well-

being, were measured several times during the rehabilitation period. The sample consisted of 193 patients aged 65 and above (mean age=78.32).

This study hypothesized that there would be a bi-directional relationship between subjective age and functional independence (expressed by FIM scores), such that a person's younger subjective age on admission would predict improved functional independence at discharge, and vice versa, that better functional independence at admission would predict a younger subjective age at discharge. A further hypothesis assessed that this relationship would be clarified by well-being (serving as a mediator), and that age awareness and gender would affect the direction and/or strength of the relationship between subjective age and functional independence (serving as moderators).

In line with Hypothesis 1, results revealed that subjective age indeed predicted functional independence. Specifically, a younger subjective age at admission predicted better functional independence (higher FIM scores) at discharge. Less consistent was the second part of Hypothesis 1 - functional independence at admission to the rehabilitation facility did not predict subjective age at discharge. On admission to rehabilitation due to stroke or osteoporotic fracture, the older adults' functioning (their FIM scores) is low and it even deteriorates in the beginning of the rehabilitation process. The patients' functioning improves once they are involved in the rehabilitation regime, and their FIM scores increase though, not enough to cause changes in subjective age. Therefore, functional independence at admission to the rehabilitation facility did not predict subjective age at discharge because the FIM scores at discharge were far better than those at admission - after all, that is the aim of the rehabilitation process. A younger subjective age holds potential for resilience and might serve as a trigger for motivation and well-being that lead to the prediction of improved functioning at discharge. In addition, the auto-regression effects were significant: subjective age at admission predicted subjective age at discharge, and FIM at admission predicted FIM at discharge. This is an indication of the stability of FIM scores, and subjective age over time, with minor diurnal fluctuations within a certain range.

The study also examined the moderating effect of age awareness and gender on the reciprocal relationship between subjective age and functional independence, as well as the mediating effect of well-being on these relationships (Hypotheses 2-5). The results showed that well-being did mediate these relationships, but age awareness and gender did not moderate the reciprocal effects between subjective age and functional independence. Gender and age awareness in combination did moderate the effect of subjective "look age" on FIM at discharge (Hypothesis #6). The results indicated, that the effect was the weakest among men with low age awareness.

The limitations of the study were related mainly to the participants' demographics. The study had a number of strengths. It is the first study (to the best of my knowledge) to demonstrate that subjective age predicts specific clinical outcomes measurable by FIM scores. The results were obtained from a sizeable sample from three different rehabilitation facilities, and a collaborative approach was used in the interviews. Finally, this study is probably the first to assess the moderating effect of gender on the relationship between subjective "look age" and "behave age" and functional independence.

Practical implications of the study were suggested identifying of the patients' subjective age prior to the implementation of their treatment protocol, and indicate potential interventions in order to induce a younger subjective age where needed. Finally, recommendations for future research are presented.

Introduction

As life expectancy increases, an increase which is particularly prevalent in the developed countries, so does the population of older adults. According to reports by the U.N., as delivered at the Davos World Economic Forum in January 2020, for the first time in history, the number of older adults (65 and above) exceeds the number of children (18 and under) (Koran, 2020). This demographic phenomenon has brought about a growing interest in the aging process and in the obvious variability in the way people experience their aging. Old age and aging have already engaged the interest of prominent figures in earlier times. For example, one of the first statesmen for example, to deal with the challenges facing the older population in his country was, the chancellor Otto von Bismarck who, in 1848, created the pension plan for the working classes upon their retirement at the age of sixty (Steinberg, 2011). The developmental psychologist Erik Erikson, known for his theory on psychological development, suggested the eight-stage scheme of a person's development from infancy to old age. During the eighth stage of life, older adults experience their aging between two extremes: integrity and despair. At one end is *integrity*, where the old persons look back on their life with satisfaction, and on the other end is *despair*, where the old persons look back on their life as a series of missed opportunities (Erikson, 1997). In other theoretical studies, researchers have tried to describe the variability of the aging experience by the enumerating the ages that portray a human being. For example, Professor Marian Rabinowitz describes six ages of a person: 1) *the calendric age* – the number of years a person has been alive; 2) *the chronological age* – a person's main achievements during the various pathways of his life such as, family and career; 3) *the biological age* –people's ability to adapt to the physiological changes that are related to their age and the diseases they suffer from. Other types of age were noted including 4) *functional age*, 5) *social age*, and 6) *cognitive age*, and 7) *emotional age* (Rabinowitz, 1985).

For centuries, the chronological age was the sole determinant in a person's life, serving as an important marker for constitutional privileges, rights, social status, and responsibilities. However, studies on the subject have indicated that while the chronological age is a good predictor of many developmental outcomes that take place in the first half of the life course, in the second half of the life course, the variance in functioning increases, rendering chronological age a less effective concomitant of health (Nelson & Dannefer, 1992). Hence, chronological age is a poor predictor of late life outcomes (MacDonald et al., 2011; Ram et al., 2010; Staudinger, 2015).

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The fact that chronological age has become less relevant in the second half of life is related to the extended longevity and the different ways older individuals cope with a prolonged aging process. Individuals in general, and especially older adults, perceive their age and aging experiences in different ways. Moreover, unlike chronological age, which is a fixed number (for a whole year a person will be the same numerical age), their aging experiences are substantially more fluid and are subject to change from day to day, and even on the same day. Recent studies have suggested the construct *subjective aging*, thus introducing a subjective measure, according to which people express how old they feel, hence the subjectivity of the construct (Diehl et al., 2014; Kastenbaum et al., 1972; Kotter-Grühn et al., 2016; Westerhof & Wurm, 2015).

The proposed study examines reciprocal relationships between subjective age and a specific clinical outcome among older adults - in this case, independent functioning following rehabilitation from osteoporotic fractures or stroke. It also deals with potential mediating and moderating effects in the subjective age-functioning link, including the variables of well-being, gender, and age awareness.

Falls and osteoporotic fractures in old age

The extended longevity poses new challenges for older adults. One of these challenges is osteoporosis. It is a common bone disease, which is characterized by the depletion of bone mass (Chalmers et al., 1969) and the microarchitecture of the bone (Silverman & Christiansen, 2012). It is associated with fragility fractures and therefore, has become a widespread health issue and a financial burden that will increase in future generations as a result of the extended life expectancy (Holroyd et al., 2008; Moyet et al., 2019). It is estimated that in the year 2025 the financial burden of the disease will amount to 25.3 billion dollars US (Johnell & Kanis, 2006; Zidén et al., 2010), 72% of which will be the cost of treating femur and femoral neck fractures (hip fractures). Therefore, osteoporotic fractures have become a challenge for the health and welfare services, as they cause morbidity and mortality among the growing older adult population (Njarlangattil & McNair, 2010). The fractures usually result in a yearlong disability period; therefore, the number of hip fracture patients at any one time exceeds the annual incidence rate (Johnell & Kanis, 2006; Stevens & Olson, 2000). The clinical symptoms of the disease are fractures following a fall, fractures as a result of a minimal injury, or occurrence without any particular trigger. Most of the older adults who have experienced a hip fracture (osteoporotic fracture of the femur or the femoral

neck) suffer from osteoporosis (Dempster, 2011; Pisani et al., 2016). Moreover, the bleak results of osteoporotic fractures include lower quality of life, higher disability, and even death (Dempster, 2011).

Falls are one of the main causes for hip fractures. The risk factors for falling are previous falls (Jin, 2018), advanced age, gender (higher risk among women), frailty, cognitive and vision problems, acute illness (Jin, 2018), urinary incontinence (Griebling, 2019; Schuter et al., 2018), depression (Digsby, 2006; Mussolino, 2005; Veronese & Maggi, 2018), and fear of falling (Ensrud et al., 2007).

Gender affects the recovery from hip fracture operations. Osteoporosis is considered a feminine disease. It is largely unrecognized and untreated among men. Men are less frequently screened for osteoporosis, and even when they sustain fractures, they are not treated at the same level as women (Alejandro & Constantinescu, 2018; Alswat, 2017). They are more at risk of mortality following a fracture, and their mortality rate is higher a year after the operation (Endo et al., 2005). Global data suggests that the incidence rate of falls is affected by gender (Cummings et al., 1995). Women who suffer from low bone density experience more fractures. Studies show that 50% of older adult women versus only 20% of older adult men will suffer from an osteoporotic fracture in their lifetime (Burge et al., 2007). The highest rate of hip fractures is found among frail old women. They are usually weak, prone to falls, to hospitalization, and even to death (Fried et al., 2001).

Furthermore, repeated falls, frailty and fear of death are associated with fear of falling (Ensrud et al., 2007). The term "ptophobia" (the phobic fear of falling when to standing or walking) was first proposed by Bhala et al. (1982) and since then, the fear of falling has become recognized as one of the post-fall syndromes, and a health problem of older adults. Falls are also a frequent complication of cerebrovascular accidents (strokes) (Knecht et al., 2011; Veronese & Maggi, 2018).

Stroke implications for older adults

Stroke or a cardiovascular accident (CVA), is one of the most common cerebrovascular diseases, especially affecting the older adult population. CVA (stroke) is "the second leading cause of death, and the third leading cause of disability" (Johnson et al., 2016, p. 634). The entire older population is at risk for stroke. Incidence of stroke increases significantly with age in both men and women, with half of all strokes occurring in people over the age of 75, and one-third in the population over the age of 85 (Stewart et al., 2016).

A CVA or a stroke, refers to sudden death of part of the brain tissue as a result of

insufficient blood flow to the brain cells. There are two categories of stroke: Ischemic stroke, which is caused by blood clots (80% to 85% of the cases), and hemorrhagic stroke, which is caused by an artery that begins to bleed into the brain (15% of the cases). It is a complicated disease in which environmental and genetic factors play an equal role in its etiology. The impairments resulting from stroke include widely diverse clinical signs and symptoms. They are unforeseen, immediate, and cause a sudden disruption in one or more of the body's functions, such as paralysis, language impairment (Aphasia), sight deterioration, and loss of equilibrium. Aphasia in men is usually more severe than in women (Sharma et al., 1999). A stroke might be followed by cognitive impairment that becomes permanent in quite a significant number of cases, and might lead to depression, which in turn further reinforces the cognitive impairment (Knecht et al., 2011). Some of the patients might suffer from emotional disorders, and communication problems (Teasell & Hussein, 2016).

The main risk factors of stroke are hypertension, which is the cause of over 12.7 million strokes worldwide (Suma et al., 2015), diabetes, dyslipidemia, and smoking. A sedentary life style and unhealthy dietary habits are also among the risk factors. Stroke is one of main causes of morbidity and mortality and this, as a result, inflicts an enormous financial burden on health systems (Joo et al., 2014).

Quite a number of gender differences can be distinguished in the epidemiology, outcomes, and treatment of stroke incidents among older adults. There is also evidence of gender differences in the quality of stroke care. One of the differences lies in the attitude of the medical establishment towards women. Due to their longer life span or biological differences, such as hormonal state, women are at greater risk to suffering from a stroke during their lifetime. According to some studies, there is a difference in the way old men and women are evaluated. It appears that men's symptoms are evaluated more carefully, and they receive more appropriate treatment; might lead to dire outcomes for women due to unsatisfactory treatment behaviors (Focht et al., 2014). According to data from a Swedish study, the chances of a woman suffering from a first stroke of receiving antithrombotic or anticoagulation drugs were slimmer as compared a man (Smith et al., 2005; Stewart et al., 2016). However, there other studies, that claim that gender does not influence the adequate diagnostic evaluation of ischemic stroke as an independent factor (Turaj et al., 2009; Watanabe et al., 2009).

Strokes affect women and men in different ways. Stroke incidences among older men are less severe but their survival rates are worse than those of older women (Dehlendorff et

al., 2015). Older men's quality of life after stroke is better than older women's and their stroke-related disability is lower than women's (Bushnell et al., 2014; Reeves et al., 2010).

Due to increased longevity, stroke incidence among women will grow over the forthcoming decades and this is a reason for concern (e.g., Gibson & Attwood, 2016; Giralt et al., 2012). Women suffer from more events of stroke and their recovery chances are slimmer than those of men. Due to increased longevity, stroke incidence among women will grow over the forthcoming decades and this is a reason for concern. Women do not recover so well after a stroke event, they do not function as well as men, they suffer more from depression, and their quality of life after a stroke event is poorer (Reeves et al., 2008). The steroid hormone estrogen may be one of the reasons for these gender differences. Women usually undergo a stroke at an older age than men do (by an average of about 4 years). In most cases, they might suffer from comorbidity, such as atrial fibrillation and hypertension. Male survivors of stroke also suffer from comorbidity, such as heart disease, diabetes, alcoholism, and smoking (Di Carlo et al., 2003; Karpal & Hill, 2003; Niewada et al., 2005; Roquer et al., 2003).

The recovery from stroke is affected by various factors, one of which is the attribution of the stroke event to 'old age'. Older adults who think that strokes are inevitable at their age are less motivated to invest in healthy behavior (Stewart et al., 2016), they may not increase their visits to their physician, and this might, in worse cases, result in hospitalization (Falcone & Chong, 2007). Findings from a number of studies have indicated gender-specific differences in stroke incidence (especially in ischemic stroke), severity, and post-stroke outcomes (e.g., Förster et al., 2009; Gibson, 2013; Gibson & Attwood, 2016; Giralt et al., 2012; Petrea et al., 2009). These differences might be a result of hormonal influences (Gibson & Attwood, 2016), the use of oral contraceptives, hormone replacement therapy, and pregnancy (Petrea at al., 2009). Clinicians should be aware of gender differences when treating patients for the outcomes of stroke, especially since it is compatible with individualized medicine. They should also provide mental support to older adults who are reluctant to change their health behavior and implement treatment protocols that are more relevant for their patients' health outcomes. Gender differences also exist in statistics of falls and fractures among older adults as described in the following section, and in the etiology, recovery, and treatment of strokes.

Rehabilitation from osteoporotic fractures and stroke- gender differences

In many cases of osteoporotic fractures and stroke, the acute and rehabilitative treatment outcomes will determine whether the patients will be disabled or will regain their functionality to the extent that they will be able to maintain an independent life (Burge et al., 2007; Njarlangatti & McNair, 2010). The rehabilitation process is a comprehensive treatment the purpose of which is to improve the function of any damaged system, so that the patient will regain, as much as possible, his physical and mental functional independence that has been impaired and limited by illness or an accident (Rosin, 2002). Regaining good functional results means performing activities of daily living (ADL), the ability to walk 300 m., carry out a 15-minute task, and it also requires the patient's acceptance of his or her disability (Nahenson et al., 1986). Stroke rehabilitation is somewhat different from hip fracture rehabilitation. It is a learning process aimed at restoring abilities impaired by the stroke. The purpose of the rehabilitation is to prepare the patient to re-enter community life (Gresham et al., 2004). In fact, 25% of the post stroke patients regain a functionality similar to those in the community who have not experienced a stroke (Rosin, 2002). Although the main purpose of the treatments at the rehabilitation facility is to maximize the patient's functional independence (Lew et al., 2002), most patients do not regain the independent functionality that they had had prior to the stroke or the fracture at the end of their rehabilitation treatments (Auais et al., 2012).

Several studies have looked into the relationship between gender and rehabilitation, especially rehabilitation from stroke and from total hip arthroplasty (THA) following an osteoporotic fracture. Some studies found no gender difference in the rehabilitation outcomes from a hip fracture (e.g., Lieberman & Lieberman 2004). According to findings from other studies, men who experience a hip fracture, experience greater losses in functionality than women (DiMonaco et al., 2012; Endo et al., 2005; Hawkes et al., 2006; Holt et al., 2008). A recent study that deals with the association between gender and rehabilitation outcomes, has indicated that rehabilitation outcomes from hip fractures are affected by gender and do not in favor men, who are more likely to experience renal failure, cardiac arrest requiring resuscitation, longer hospitalization, and non-home discharge (Swenson et al., 2018). These findings are supported by previous studies claiming that male gender is related to a high risk of losing the ability to walk and even death, but only among males with cognitive dysfunction (Endo, et al., 2005; Samuelsson et al., 2009). The Functional Independence Measure (FIM) is used (also in the current study) to assess the patients' functionality (Keith et al., 1987) at the beginning of the rehabilitation period and at discharge. It turns out that the

discharge FIM scores of women after a hip fracture are higher, in comparison to those of men (Mizrahi et al., 2014).

The relationship between gender and rehabilitation from stroke shows a different picture. Women suffer from more post-stroke disability. These results stem from the women's pre-stroke functionality and health and from their cognitive condition (measured by the Mini-Mental State Examination (MMS) (Folstein et al., 1975) and their FIM scores on admission to the rehabilitation facility (Mizrahi et al., 2012).

Despite these differences, it is important to identify relevant markers of the rehabilitative prognosis of patients, bearing in mind that their medical condition has implications for the patients' families and friends. The current study has examined such relevant markers by examining the reciprocal effects of patients' subjective age and their rehabilitation outcomes. It seems that subjective age is a good predictor of health of older adults (Kotter-Grühn et al., 2016; Montepare, 2009) and can therefore, become a potential predictor of specific clinical outcomes such as functional independence following osteoporotic fractures and stroke.

Subjective aging

According to some schools of thought, aging is considered a natural developmental process (Palgi et al., 2010; Romana et al., 2019). Other researchers consider the aging process to be a social and cultural category that is rooted in the comprehensive constructs of society and derives its meaning from them (Twig, 2004). Since the late 1990s, there has been a growing interest in the process of aging and, with it a growing understanding that older adults experience their aging in different ways (Kotter-Grühn et al., 2016). Older adults' understanding of their aging is affected by their social environment, and by social comparison processes (Diehl et al., 2015). In fact, the subjective experiences of aging persons, and their awareness of this process, are an integral part of psychological processes, or emotional and physical conditions of the aging person (Ryff, 1984). Findings show that individuals reflect on their own aging and interpret it (Diehl et al., 2014). Changes in the biological, social, and psychological functioning of the old person are a significant source of this process of reflection. The theoretical and empirical construct 'subjective aging' has emerged following findings showing that individuals reflect on their own development and strive to understand their aging process (Diehl et al., 2015).

Subjective aging is a multidimensional measure (Brothers et al., 2015), that refers to how individuals perceive their own aging process. The concept comprises a complex process evolving from personal experiences, a person's values, his culture, and his social interactions (Diehl et al., 2014; Westerhof & Tulle, 2007). It and can be defined as: "a viable theoretical and empirical construct (that) rests on the observation that individuals reflect on their own development and interpret their aging as they move across the life-span" (Diehl et al., 2015, p. 3). It is seen to be the result of an intricate process involving personal experiences, social interactions, intergroup stereotypes, cultural values, and societal structures (Diehl et al., 2014; Westerhof & Tulle, 2007). In light of the lengthened life expectancy in recent decades, the significance of this construct is increasingly growing. The lengthened life expectancy may have negative implications for the older adults' quality of life. Aging is associated with growing risks of chronic diseases or disabilities due to the deterioration of the functional capacities of the aging person (Baars, 2013). Negative or positive self-perceptions of one's aging may have implications for the older person's health and quality of life (Brothers et al., 2015). Actually, a good way to ensure a better quality of life while getting old is to adopt positive attitudes, such as showing empathy to others, or showing resilience vis-à-vis stressful events (Romana et al., 2019).

Studies indicate a correlation between subjective aging and between health and survival (Diehl et al., 2015). For example, according to findings from a longitudinal study in the United States, older adults who have positive perceptions of their aging process, live on average 7.5 years longer than older adults who have negative perceptions of their aging process (Levy et al., 2002). Therefore, subjective aging could predict health outcomes (e.g., Wurm et al., 2007), and reflect a psychological mechanism that could explain the adjustment processes to health challenges in old age (e.g., Brothers et al., 2015; Wurm et al., 2013). According to findings of a study which examined the influence of specific views of aging on health changes in later life (Wurm et al., 2007), negative views of aging affect older adults' health, while positive views of aging serve as protection. According to the authors, a change in societal views of aging might improve the aging process of older adults.

The overarching construct "subjective aging" consists of a number of components used to gain an understanding of how aging adults perceive their aging process (Diehl et al., 2014; Westerhof & Wurm, 2015). The major components include (1) *age identity*- the person's identification with an age group (Barak, 2009; Diehl et al., 2014); (2) *self-perceptions of aging* - the way people experience their aging; (3) *attitudes toward aging and*

age stereotypes - beliefs and characteristics that society thinks are typical of old people; (4) *awareness of age related changes*- feelings that are affected by changes that increase or decrease the older persons awareness that they are getting old; (5) *subjective age*- how old people perceive themselves to be (Diehl et al., 2014; Kotter-Grühn et al., 2016). Findings from a study on a sample of 819 adults aged 40-95 years from the United States and Germany (Brothers et al., 2017), indicate that these components are correlated, but each has a specific feature of subjective aging, and can predict, in different ways, a person's functional health and satisfaction with life. The current study focuses on two components: subjective age and age awareness. These components are expanded in the following chapters.

Subjective Age

The construct *subjective age* has been methodically researched since the 1950s, highlighted in Peter's (1971) meticulous study of how individuals, and especially older adults, perceive their age, and their aging process (Barak & Stern, 1986; Westerhof et al., 2014). A further pioneering study by Kastenbaum and his colleagues in 1972 (Kastenbaum et al., 1972) introduced the construct as a multidimensional concept that has four dimensions, namely, *feel age*, *look age*, *do age*, and *interest age* (Gabrian & Wahl, 2017) also known as "ages of me" (Teuscher, 2009). Much later, Diehl and his colleagues (Diehl et al., 2014) maintained that subjective age is a unidimensional measure of age identity. Other scholars extended the multidimensional concept to a perceived "mental age", "perceived age", and "physical age" (Uotinen et al., 2005). "Subjective age", or, as it is sometimes referred to as "self-perceived age" (Rippon & Steptoe, 2015), relates to the way a person perceives his or her age. It has since become a significant concept in gerontology (Stephan et al., 2015). According to Montepare (1995), the construct subjective age might be considered a useful alternative measure of adult development. People can feel how much older or younger they are than their actual chronological age (Rippon & Steptoe, 2015; Stephan et al., 2018). The penchant for feeling younger or older than one's chronological age is a significant phenomenon with consequences for mental and physical outcomes (Marquet et al., 2018; Shinan-Altman & Werner, 2019).

The most common operationalization of the construct of subjective age is obtained by asking a person *"How old do you feel?"* (Hughes & Lachman, 2018; Ihira et al., 2015; Kotter-Grühn et al., 2009, 2015; Stephan et al., 2015), or variations such as: "Even if someone is old (in number of years), they do not necessarily feel old. Do you feel old?"

(Infurna et al., 2010). The response rarely corresponds with the person's chronological age. Most responses are given in the form of a raw score to indicate a certain age (for example, "I feel I'm 65") (Kotter-Grühn et al., 2016). Some responses relate to a discrepancy score or to a discrepancy score proportional to the person's chronological age (Rubin & Berntsen, 2006). The discrepancy score is calculated by subtracting subjective age from the chronological age and then dividing the result by one's chronological age (Diehl et al., 2014; Kotter-Grühn et al., 2016; Stephan et al., 2015). A younger subjective age results in a lower value of the discrepancy score, while an older subjective age gives a higher value of the discrepancy score (Takatori et al., 2019). Findings from a 6-year longitudinal data from the Berlin Aging Study (age range = 70-104 years) have indicated that older adults felt, on average, 13 years younger than their actual age (Kleinspehn-Ammerlahn et al., 2008). In a study conducted on a sample of 3,094 older adults aged 65 years or older, the participants' subjective age was significantly younger than their chronological age (Takatori et al., 2019), which is in line with findings from previous studies (Stephan et al., 2013, 2015a, 2015c, 2016). When older adults feel younger or older than their chronological age, it is because they are affected by distal or proximal events, as well as current life situations that serve as reference points. Distal reference points are significant developmental phases in the older adult's life. Proximal reference points include events that underscore the person's age, such as, birthdays (personal events), physical events such as stroke or heart attack, normative events (graduation, marriage) and inter-personal events (Martin & Martin, 2002; Montepare, 2009). The subjective age of a person, then, is affected by proximal and distal reference points, by personality characteristics, and by the person's general age awareness (Westerhof et al., 2012). A person's subjective age is affected by both proximal and distal events. When the person's subjective age is affected by distal reference points and personality characteristics, we expect that their subjective age would be relatively stable for long periods of time. However, if the person's subjective age is affected by proximal reference points, like personal somatic events or interaction with younger or older people, then we anticipate fluctuations in the person's subjective age (Kotter-Grühn et al., 2015).

Some gerontologists (Gendron et al., 2018) argue against the validity of the operationalization of subjective age by the question, "How old do you feel?", maintaining that aging is a multidirectional process (Barrett & Montepare, 2015) that is affected by growth, decline, constant maintenance, and cultural factors. They argue that this operationalization of subjective age attributes negative connotations to the term "old" and is a form of ageism even if it is done unintentionally. They offer alternative ways to formulate

proper questions to operationalize subjective age, which will "allow the researcher to gauge felt age without pathologizing the term old" (Gendron et al., 2018, p. 621). Montepare (2009) claims that this kind of measuring does not tell us anything about the causality of the older person's perception of his age, and which personal age experiences contributed to her or his perception. Teuscher (2009) looked into subjective age measurements and assessed subjective age in general, with the question: "If you compare yourself to people your age, how old do you feel in general?" (p. 25). The answers ranged from "much older" to, "much younger". Teuscher's (2009) findings support the traditional measurement model of subjective age (Barak, 1987) as described by Kastenbaum et al. (1972) and maintained that the subjective form of measurement could indeed be used. A number of later studies have used this classical measurement of subjective age. In a 2016 study, for example, Ayalon and her colleagues examined changes in subjective age by asking respondents how old they felt (Kastenbaum et al., 1972; Rubin & Berntsen, 2006). Choi et al. (2014) examined correlates of discrepancy between chronological age and felt ages using the classical measure in the form of the question: "Sometimes people feel older or younger than their age. During the last month, what age did you feel most of the time?" (p. 5).

Subjective age is not a constant, but rather a dynamic construct that fluctuates throughout a person's lifetime (Westerhof & Wurm, 2015). Like certain age perceptions, subjective age might show daily changes that are related to events, emotions, and experiences such as negative affect, physical symptoms, pain, and daily tensions (Armenta et al., 2018; Bellingtier et al., 2017; Kotter-Gruehn et al., 2015; Shrira et al., 2018). Therefore, subjective age is sensitive to the person's experiences and environment (Diehl et al., 2014; Hughes et al., 2013). Indeed, one might receive a more accurate estimate of an older person's subjective age by asking: "How old do you feel *now*?". Daily changes in subjective age have been confirmed by an 8-day daily study conducted by a number of researchers (Eibach et al., 2010; Hughes et al., 2013; Kotter-Grühn & Hess, 2012; Stephan et al., 2013). Results from this research demonstrated that subjective age may change on a short-term basis and that these fluctuations of subjective age are linked to the participants' health, namely, their physical functioning and physical sensations (pain) (Miche et al., 2014). This might also imply that fluctuations in older adults' health could be linked to their daily subjective age; on days that an older persons do not feel well they might feel older than their chronological age (Bodner et al., 2017).

Besides corroborating Westerhof and Wurm's findings (2015) that subjective age, as

well as people's attitude toward their aging, are dynamic and change throughout one's life time, Bodner and his colleagues (2017) found that 75.3% of their sample (N=4174) reported changes in their attitudes toward aging that resulted in a decrease or increase in their subjective age. Their findings have indicated a negative correlation between individuals' attitudes towards aging and their subjective age. Specifically, a less positive attitude toward aging is correlated with an older subjective age. Feeling older than one's chronological age implies negative perceptions of aging and is correlated with negative outcomes (Diehl & Wahl, 2009; Diehl et al., 2014).

An older subjective age, also known as an old age identity, is coupled with negative concomitants, such as depression and anxiety (Shrira et al., 2014), indicators of biological susceptibility (Lahav et al., 2018; Stephan et al., 2015a, 2015b, 2019), sleep difficulties (Stephan et al., 2017), and undesired health behaviors such as reduced engagement in preventive health conduct (Lahav et al., 2018; Wienert et al., 2017). It is related to higher posttraumatic stress disorder (PTSD) symptoms (Hoffman et al., 2016), and is associated with a higher risk of mortality among older adults. This reinforces the role of subjective age as a "biopsychosocial marker of aging" (Stephan et al., 2018).

A more positive attitude toward one's aging is correlated with a younger subjective age (Bodner et al., 2017). Older adults endeavor to maintain a younger subjective age because it is an asset for them; being "young" is perceived to contribute to their awareness that they are resilient and have enough resources to deal with traumatic events and their repercussions (Hoffman et al., 2016). For example, older adults who felt younger than their chronological age reported a higher level of cognitive functioning even if they suffered from high levels of depression, while older adults who felt older than their actual age reported lower levels of cognitive functioning (Choi et al., 2019). There is also growing evidence of a correlation between a younger subjective age and decreased mortality risk (Kotter-Grühn et al., 2009; Stephan et al., 2018). It appears that a youthful subjective age, especially in the second half of life, has many benefits for the older adult. It is associated with lower risks of major depression (Keyes & Westerhof, 2012), reduced psychological anxiety (Shrira et al., 2014), and fewer depressive symptoms (Avidor et al., 2016; Choi & DiNitto, 2014; Uotinen et al., 2005). Findings from a recent study (Thyagarajan et al., 2019) indicate that older adults who feel younger than their chronological age may have better biomarker profiles which may reduce the possibility of age-related diseases. Thus, for example, findings from a study by Shrira et al. (2016) on a sample of older adults who suffered from PTSD symptoms resulting from exposure to missile attacks in the southern part of Israel, have indicated a less

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successful aging process. At the same time, older adults of the same sample who maintained a younger age identity—a younger subjective age—did not report a decrease in the quality of their aging process, although they also suffered from symptoms of PTSD. A younger subjective age implies a positive perception of a person's own aging which is related to positive developmental outcomes, while an older subjective age implies negative perceptions of a person's aging which are related to negative developmental outcomes (Gabrian, 2016).

A person's subjective age is a predictor of a wide range of developmental outcomes (Gabrian & Wahl, 2017). Not only does subjective age predict psychological and health-related outcomes (Spuling et al., 2013; Stephan et al., 2015), but it also predicts the person's ability to adjust to life changes that are known to have undesirable effects on older adults (Spuling et al., 2013; Stephan et al., 2011). Montepare (1996a, 1996b) maintained that subjective age is a stronger predictor than chronological age of adults' self- esteem and attitudes toward their bodies. The way older adults perceive their age is a strong reliable predictor of physical functioning (Kotter-Grühn et al., 2016; Montepare, 2009), as well as a variety of outcomes, including subjective well-being (Westerhof & Barrett, 2005), and incident hospitalization (Stephan et al., 2016). These findings refer to the concept of health outcomes in a wider sense that includes physical, functional, cognitive, mental, and subjective health (Wurm et al., 2017).

Besides being a strong predictor of old age attributes, subjective age is also related to older adults' ability to better adapt to old age, and is usually correlated with positive outcomes (Shrira et al., 2014). There are even findings that show a relationship between subjective age and reduced morbidity in old age (Spuling et al., 2013) and higher self-esteem (Westerhof et al., 2012). More recent studies have indicated a correlation between subjective age and specific health outcomes. For example, findings from a 2015 study on a sample of 4,776 adults from the Health and Retirement Study (HRS) (Fisher & Ryan, 2018) have indicated a correlation between, among other things, a higher waist circumference, lower grip strength, lower peak expiratory flow (all included in common medical examinations) and subjective age (Stephan et al., 2015). A study that used data from the 2016 Dementia Literacy Survey (Lee et al., 2016) including 526 community-dwelling Korean older adults (aged 60–79) who felt younger than their chronological age reported a higher level of cognitive functioning despite the fact that they suffered from high levels of depression, while older adults who felt older than their actual age reported lower cognitive functioning (Choi et al., 2019). In the same study, conducted in 2008, which included 2,214 participants, no correlation was found between blood pressure, telomere length, and subjective age. However,

findings from a later study, that measured telomere length in 88 former older adult prisoners of war from the Israeli Yom Kippur War, showed longer telomere length among veterans who perceived themselves as younger (Lahav et al., 2018). Telomeres are short nucleotide sequences found at the end of chromosomes that protect the genetic information. Longer telomeres are associated with a lower rate of age-related diseases and a higher life expectancy. A younger subjective age, therefore, could be related to longer telomeres which is in line with former findings about the relationship between subjective age and health (e.g., Kotter-Grühn et al., 2016; Montepare, 2009; Stephan et al., 2013). Findings from another study published in 2018 (Kwak et al., 2018) have indicated a correlation between subjective age and health outcomes of the neurobiological process of aging. Sixty-eight older adults underwent magnetic resonance imaging (MRI) scans. The MRI results of older adults whose subjective age was younger than their chronological age have revealed an actual brain anatomy of a younger person. These findings may indicate a correlation between subjective age and estimated brain age, as the brain age of the older adults in this study who felt younger than their actual age, was four years lower than the brain age of older adults who felt older than their actual age (Kwak et al., 2018).

We can deduce that subjective age, then, is a positive multidimensional attribute for older adults, and possessing a younger subjective age has a plethora of benefits for this population. This raises the question of whether it is possible to induce a younger subjective age in older adults whose perceived age is older than their chronological age, and who consequently have to live with the negative implications of having an older subjective age. Early experimental studies have indicated that subjective age may change because of induced age-related experiences (Gabrian & Wahl, 2017). A seminal study by Stephan et al. (2013) manipulated a sample of older adults using the model by Hughes and Lachman (2016), according to which social comparisons of health and cognitive functioning contribute to changes in subjective age, and may even affect life satisfaction (Frieswijk et al., 2004). When older adults have to cope with age-related challenges, especially when it concerns their health, they tend to compare themselves to their peers who are in worse condition. As a result, they enjoy higher life satisfaction, feel younger than their chronological age (Frieswijk et al., 2004; Infurna et al., 2010), and have improved perceived health (Cheng et al., 2007). In fact, in a study by Stephan and his colleagues (2013) is the only one that resulted in inducing a younger subjective age among older participants who had received positive social comparison feedback on their handgrip task (Gabrian & Wahl, 2017). It seems that it is also possible to induce an older subjective age. A recent study examining the effect of cognitive

testing and feedback on subjective age. The findings have indicated that older adults feel older than their actual age during the testing session (Geraci et al., 2018; Hughes et al., 2013). In another recent study, a younger subjective age was experimentally induced in a group of 203 participants, aged 60-84 years old. The result showed that this led to better memory performance (Shao et al., 2018). This is in line with former studies according to which subjective age can be affected by memory and reading tests (Eibach et al., 2010; Hughes et al., 2013). Implementing strategies that will result in a younger subjective age and promote a youthful age identity which, in turn, will result in more positive attitudes toward own aging might alleviate the burden of costs of public health authorities (Sarkisian et al., 2007; Westerhof et al., 2014; Wolff et al., 2014).

Although subjective age is a significant predictor of several health outcomes, few studies have assessed whether subjective age can predict clinical outcomes (such as rehabilitation outcomes) among older adults suffering from age-related diseases (see exceptions in studies that examined the relationship between subjective age and functioning among convalescing cancer patients; Boehmer, 2006; Lim et al., 2013). Moreover, the mechanisms that link subjective age to better functioning are not sufficiently clear. In addition, the issue of whether different types of subjective age are related to different or similar functioning among women as compared to men has not been examined so far. Subjective age is a multidimensional construct as suggested by Kastenbaum and his colleagues (1972) and has been further expanded by other authors (Uotinen et al., 2005), who focused on perceived mental age and perceived physical age.

A multi-dimensional aspect of subjective age
In a seminal study of subjective age, Kastenbaum and his colleagues (Kastenbaum et al., 1972) identified the multi-dimensional characteristic of subjective age. They defined four dimensions: felt age, look age, act age and interest age. They also named five behaviors that stimulate subjective aging experiences among older adults: 1. Health and physical functioning, 2. Cognitive functioning, 3. Interpersonal relationships, 4. Social-cognitive and social-emotional functioning, 5. Life style. When an older adult is asked how old he or she feels, the response gives a limited description of the subjective perceptions of the age. One of the justifications for using subjective age as a multi-dimensional construct derives from the study, according to which there is a relationship between the different dimensions of subjective age and various constructs of identity (Montepare, 1996). In order to measure the

four different dimensions of subjective age the participant is asked questions regarding each of the four dimensions. Regarding the felt age, the question is: "Most of the time I feel as if I am …years old"; the question regarding the act age is: "Most of my activities are similar to somebody who is …years old"; regarding the look age, the questions is: "Most of the time I look like I am …..years old"; and regarding the interest age, the question is: "Most of the time my areas of interest can be compared to somebody who is …years old" (Kastenbaum et al., 1972). Other researchers have offered additional dimensions of subjective age, such as mental age, physical age, physiological age, and social age (Montepare, 1996; Uotinen et al., 2005). Statistically speaking, most of the dimensions of subjective age converge into an overarching one-dimensional construct (Barak, 1987; Hubley & Russell, 2009; Teuscher, 2009). The multi-dimensional approach to subjective age is widely used in the psychology of marketing (Barak & Rahtz, 1999; Mathur & Moschis, 2005), however, several studies of the psychology of aging use the one-dimensional approach and focus mainly on "felt age" (e.g., Kotter-Grühn & Hess, 2012) which in Diehl and his colleagues' opinion (Diehl et al., 2014), has limited the research into subjective age. On the other hand, quite a number of studies have examined the multi-dimensionality of the construct of subjective age (e.g. Barret & Montepare, 2015; Kornadt et al., 2018). Therefore, the current study examines four dimensions of subjective age: look age, behave age, mental age, and physical age, while taking into consideration the gender perspective, which will be expounded upon in the next chapter.

Gender as a moderator of the correlation between subjective age and functional independence

The renowned gender theorist and philosopher, Judith Butler (1990) who coined the phrase "gender performativity" – according to which gender is only an imitation of behaviors which are perceived as feminine or masculine – claimed that "gender" and "age" are social constructs that are a result of men's hegemony over women and of "young" over "old". Nevertheless, people's feelings and perceptions regarding their body are affected by gender and by chronological age (Ålgars et al., 2009). According to Silver (2003), in our postindustrial society, gender identities have undergone change in old age, and the clear-cut gender identities that were eminent in younger ages, have dwindled in old age. Silver maintained that the fact that older adults are less inclined to characterize themselves in terms of gendered identities is a paradox.

Two of the aforementioned dimensions of subjective age, "look age" and "behave age", apply to studies (Franzoi, 1995; Franzoi et al., 2012) showing that men and women have different body orientations, which are affected by their masculine or feminine traits, and by whether their perceptions are of the body-as-object, the "look age", or the body-as-process, the "behave age". Franzoi's findings (1995, 2012) were confirmed by a much later study (Lipowska et al., 2016), according to which women perceive their body as an object, composed of parts that are subject to others' scrutiny and evaluation, mainly by men, but also by their female peers. Men, on the other hand, would perceive their body as a process, namely, a means to efficient functioning rather than a matter of beauty (Franzoi, 1995; Lipowska et al., 2016). Treating the body as an object means perceiving the body as a system that consists of static and independent body parts such as, face, hands, and torso. Each part is subject to independent evaluation. Men, on the other hand, consider the efficient functioning of the body most important. Girls, as well as older women, consider personal appearance a significant part of their identity as compared to men, and this relates directly to the women's levels of self- esteem (Franzoi et al., 2012; Lipowska et al., 2016).

Subjective age is affected by many different factors, one of them being self-esteem. There is evidence that there is a significant positive correlation between subjective age and self-esteem (Borzumato-Gainey et al., 2009). The younger people feel, the higher is their self-esteem (Borzumato-Gainey et al., 2009; Robins & Trzesniewski, 2005). Her bodily appearance is part of the woman's "self" and determines the degree of women's, including older women's, self-esteem (Franzoi et al., 2012). Hence, the decline of physical appearance explains low self-esteem (Patrick et al., 2004). Beauty tends to diminish with time, and so does attractiveness, especially, among older women (Clarke, 2018). Beauty is a woman's asset that, in her youth, contributes to her status and in old age, results in her losing social status in Western culture (Bordo, 2003). Gender differences in body self-esteem resulting in gender body image are one of the reasons why women and men have different body orientations.

The different attitudes men and women have toward their bodies stem from socialization processes through which men and women internalize stereotypical gender insights. On top of the self-evaluation of their bodies and treatment of them as objects, gender stereotypes enhance the importance of beauty among women ("look age"), and at the same time, emphasize its role in women's social life. The female body is a specific object that is located at the core of the evaluation by both sexes, and is a principal component in women's

self-esteem (Tiggemann & McCourt, 2013).

Men's treatment of the body as a process is focused on its functioning ("behave age"), rather than its image. Therefore, the body is considered an active, effective, and coherent entity resulting in men being less judgmental of their personal appearance. As a result, men are satisfied with their body as long as it functions well (Lipowska et al., 2016). There is also the possibility that old men do not consider how they look in the same way that old women do. Bearing in mind Susan Sontag's "double standard of aging" (1975) hypothesis, old men age much better than women, they look more presentable and, often, their sexual image is not impaired by their aging process. Definitions of women as beautiful, on the other hand, are linked only with young age and therefore, the older they become, the more likely they are to be exiled from the social scene and condemned to oblivion (Calasanti & Slevin, 2001; Cruikshank, 2003; Halliwell & Dittmar, 2003). Older women perceive their aging as a process which distances them from the ideal female body image, which is young, lean, and fit (Winterich, 2007). This decline through age and its consequences for women do not set in until early old age. Findings from a study that consisted of a lifespan sample (from the age of 17 to the age of 85), showed that during adulthood up to middle age, women perceive themselves as more and more attractive, but this self-perception becomes negative by the age of sixty (Montepare, 1996). Therefore, women's fear of aging is stronger than men's (Clarke, 2002). Moreover, modern anti-aging procedures enhance impossible body perceptions that lead to an inferior body image that might result in undesired health behaviors (Cameron, et al., 2019). No wonder women invest enormous resources in an attempt to beautify themselves in what they think might help delay their aging process (Clarke, 2018; Gosselink et al., 2008). They suppress their chronological age, and, especially today, present themselves as young even after the age of forty, and hope to remain forever in a state of youth (Barak & Stern, 1985).

In a meta-analysis on the construct of subjective age, Pinquart and Sorensen (2001) claimed that older women's inclination to feel younger should not be interpreted as a positive perception of the aging process, but rather as an indication of a strategy for self-enhancement because aging men and women are judged by different standards. Old women feel that they are under greater pressure to distance themselves from their chronological age, and therefore tend to adopt a younger identity as compared to old men (Barrett, 2005; Pinquart & Sorensen, 2001).

Putting on a mask (in a figurative way) is one of the strategies older adults use to cope with the contradictory experiences of aging in our post-modern consumer society. Older

adults use a mask motif as a strategy to face the challenges of their aging self. The tactics of using metaphors of narratives and masking is a means to reconcile the inner self with the self that is revealed to society. The use of the mask motif is based on two theories (Biggs, 1997). According to Featherstone and Hepworth (1989), the mask is used when society considers physical aging a negative phenomenon. Woodward (1991) refers to the work of the psychoanalyst Riviere (1929), according to which the mask serves as a front that conceals social and physical expressions of aging (Biggs, 1997). Masking is a defense mechanism that is used to obscure the signs of aging, but by doing so, it reveals to society the fact that there is something that needs to be concealed. As a result, old persons, who try to hide their aging, will magnify attitudes of ageism towards them. Moreover, by doing so, older adults confirm the social norm that aging is something to be ashamed of, and that it should be hidden. Julia Twig (1997) reached a similar conclusion from a different point of view. When she discussed the subjective experiences of the body, especially on the background of an institute where it is managed (a nursing home, for example), she enlisted Foucault's insights on the subject. According to Foucault, a dark counter-movement arose alongside the rise of the parliamentary institution: "What was then being formed was a policy of coercions that act upon the body, a calculated manipulation of its elements, its gestures, its behavior. The human body was entering a machinery of power that explores it, breaks it down and rearranges it" (Foucault, 1979, p. 138). Twig portrayed the asymmetry that exists between a caregiver and an old care recipient while she is being washed. The picture of the frail naked old woman who is being washed by the dressed caregiver bending over her, portrays the vulnerability of the care recipient vis-à-vis the caregiver, and emphasizes the asymmetry in their relationship, especially to a "young observer", who only sees an unattractive and dependent aging body. A society that worships the culture of the young, interprets the physical markers of aging as personal failure, especially if the subject of the observation is the body of an old woman.

Women undergo significant socialization, more than men do, in the way they value their appearance. They tend to internalize cultural and social perspectives regarding their body and as a result, develop feelings of shame and anxiety regarding their aging body, which enhances the fear of the aging process they are undergoing (Huebner & Fredrickson, 1999). Findings from a study, that compared attitudes of young adults in Germany and in the United States, have shown that women in both countries have more anxieties regarding their aging as compared to men, especially when it concerns losses that relate to their personal appearance (McConatha et al., 2003). Social and cultural pressure compels older adults of

both genders to invest in attempts to slow the decline caused by aging (Jankowski et al., 2016); however, it seems that maintaining a younger identity is especially important to women in order for them to preserve their positive self-image (Melamed, 1983). They do so by developing subjective illusions of a young appearance, using cosmetic products, undergoing cosmetic surgery, and by comparing themselves to their peers who look older (Rodeheaver & Stohs, 1991). Maintaining a younger subjective age means more to women than to men, but is more difficult to attain (Pinquart & Sorensen, 2001).

As to the satisfaction of old women with their body, opinions vary. In general, in most cases, old women, like young women, are far from being satisfied with their appearance (Bedford & Johnson, 2005; Clarke & Korotcheko, 2011; Dumas et al., 2005; Grippo & Hill, 2008; Grogan, 2008; Lewis & Cachelin, 2001; McLaren & Kuh, 2004; Slevin, 2006; Tiggemann, 1998; Tiggeman & Lynch, 2001). Other studies (e.g., Öberg & Tornstam, 1999) indicate that, as they grow older, women are more satisfied with their bodies, and seem to come to terms with their age-related changes. The old participants in Krekula's study (2007) expressed their dissatisfaction with their aging body, but at the same time experienced their body as a source of pleasure. They enjoyed physical activity and sexual relationships, and were proud because they had managed to maintain their identity and independence, which was expressed, among other things, in the way they dressed.

According to a number of studies, older men are less concerned with their appearance and age-related changes, and have higher self-esteem than older women (Demarest & Allen, 2000; Ferraro et al., 2008; McMullin & Cairney, 2004; Öberg & Tornstam, 1999; Pliner et al., 1990; Tiggemann, 1992). Men perceive function as the strength and independence that is the result of an able and muscular body. Losing muscle mass may have a negative effect on men and may harm their self-esteem (Kaminski & Hayslip, 2006). Older men are dissatisfied with their muscularity in the same way that older women are dissatisfied with their weight (Tiggemann et al., 2007). A muscular body means control, strength, manhood, and self-esteem (Baghurst et al., 2006). Losing muscle mass might result in an "identity crisis" (Pope et al., 2000). Men tend to reject the idea of a slimming diet claiming that it represents feminine behavior. However, recently, being overweight has become a concern for men, especially younger men, because they associate it with values that are not in line with hegemonic masculinity such as, a weak character and lack of control (Grogan & Richards, 2002). The deterioration of physical functioning has a negative effect on old men (Mishkind et al., 1986; Pope et al., 2000).

In the current study, it is hypothesized that, among women, a reciprocal relationship

exists mainly between subjective age that relates to appearance and functional independence, while among men, a reciprocal relationship exists mainly between subjective age that relates to behavioral and functional independence. The gender variable moderates the reciprocal effects of subjective age and functional independence. The gender-moderating effect is especially potent among older adults with elevated age awareness (an interaction between gender and age awareness). Potent reciprocal relations between the subjective age of personal appearance and functional independence among women with elevated age awareness, and potent reciprocal relations between old men's subjective age related to behavior and functional independence among those with elevated age awareness, will be discussed in the next chapter.

Age awareness as a moderator of the relationship between subjective age and functional independence

Chronological age, together with the awareness of one's age, is inherent among older adults (Diehl & Wahl, 2010) and it affects the way older adults perceive themselves and their lives (Bergman & Bodner, 2020). The construct "age awareness" relates to the aspect of self-awareness, which leads to specific knowledge that older adults have regarding their aging process (Diehl et al., 2014), and was first defined as "the extent to which adults attend to or possess an awareness of their age" (Montepare, 1996, p. 195).

The construct of age awareness reflects the importance adults, and especially older adults, attribute to age, as a category that affects their self-perception, and the way they view themselves (Bergman & Bodner, 2019). Older adults' attitudes to their age and aging vary between two extremes: at one end, are those who are really anxious about their progressing age (Lynch, 2000; Saxena & Shukla, 2016), which means that they are highly aware of their age, and tend to blame almost every phenomenon on the fact that they are getting older. At the other end are those who have made peace with the fact that they are getting old, and if they have difficulty in climbing the stairs, they immediately start with aerobic activity in order to get back into shape (Lynch, 2000; Saxena & Shkla, 2016).

People who treat their age as just one characteristic among many others, and not the main one, have lower age awareness. These people will tend to relate to distal reference points such as events from their youth (e.g., graduation, release from the army) when they form their age perceptions (such as, subjective age). Other people who consider their age a central characteristic of their self-identity – enhanced age awareness – will use proximal reference

points that include events that underscore their age, such as birthdays which mark the accumulation of years, when they formulate their age perceptions.

According to the study hypotheses, age awareness would moderate the reciprocal relations between subjective age and functional independence. These reciprocal relations between subjective age and functional independence would be stronger among those who have a greater awareness of their age. Among those with low age awareness, the reciprocal relations between subjective age and functional independence will be weaker or non-significant. Age awareness would also moderate the indirect effect of subjective age on functional independence (through the patient's well-being). More specifically, well-being will mediate the reciprocal relations between subjective age and functional independence especially when age awareness is high.

This is an interaction hypothesis, meaning that one view of aging (i.e., age awareness) increases the effect of another view of aging (i.e., subjective age) thereby increasing the effect on health outcomes and well-being. A recent study demonstrated an example of the way various views on aging can interact with one other and thus increase their effect on health outcomes (Bodner et al., 2020). According to the authors' findings, two views on aging (according to Wurm et al., 2017) – daily subjective age and daily ageist attitudes – have demonstrated an interactive effect on mental health in the form of precipitating symptoms. A further example of how one view of aging increases the effect of another view of aging has been demonstrated by yet another study indicating that older adults with older age perceptions (an older subjective age) suffered from increased distress and diminished well-being compared to older adults with a younger subjective age. A high age awareness might challenge older adults' ability to perceive themselves as having a younger subjective age (Bergman & Bonder, 2020), and might lead to undesirable psychological outcomes, such as increased depressive symptoms (Bergman & Bodner, 2019, 2020), and even suicidal thoughts (Montepare, 1996; 2009). The reason for these dire outcomes might be older adults' recognition that they are mortal, and that death is not far off (Bergman & Bodner, 2020).

Well-being as a mediator of the reciprocal relations between subjective age and functional independence

Besides looking into the moderating effects of gender and age awareness, the current study will try to identify the mechanisms which mediate the reciprocal effects of subjective age on functional independence. One major mediator in the current study is well-being. The concept of well-being is complex, and therefore, not easy to define. A number of studies have been

devoted to the definition of this construct, and it has been operationalized in different ways by psychologists and sociologists (Chandler & Robinson, 2014). Ryff, one of the prominent researchers of the construct of well-being wrote that well-being may be defined as "the striving for perfection that represents the realization of one's true potential" (Ryff, 1989, p. 100). Huppert and So (2013), claimed that well-being is the same as positive mental health in contrast to those common mental disorders which are described in standard mental health classifications. When asked how one defines happiness and in what way it is different from well-being, Matthew Killingsworth explained that people tend to simplify reality which is multi-dimensional, so that they can measure it and use words to describe it (Maor, 2021). Killingsworth (2021) distinguished between two forms of well-being: a) Experienced well-being, a term that relates to how people feel at any given moment of their lives, and b) Valued well-being (or life satisfaction) which relates to the way people evaluate their life satisfaction (Killingsworth, 2021).

Another interesting definition of well-being was suggested by Dodge and colleagues (Dodge et al., 2012), who claimed that former definitions of the construct were actually "descriptions", rather than "definitions" of well-being. They based their definition on the need for an individual to achieve a set-point of well-being through an equilibrium between the individual's psychological, social, and physical resources, and a particular psychological, social and/or physical challenge he or she is facing (Cummins, 2010; Hendry & Kloep, 2002). When this equilibrium or homeostasis is disrupted, the individual's well-being becomes precarious. Dodge and his colleagues (2012) suggested that a better definition of well-being would be to phrase it as a state of balance that can be influenced by life events or challenges.

The research into well-being and the definitions of the construct have been mostly characterized by two traditions. One derives from the Epicurean conception of Hedonism, which focuses on pursuing pleasure and striving to minimize pain, and the other derives from the Aristotelian term, Eudemonia, that focuses on striving to realize one's potential and finding meaning in life (Deci & Ryan, 2008; Shmotkin & Shrira, 2013).

Well-being actually has three components|: The hedonic dimension is realized in the construct of 'subjective well-being', according to which people perceive their life as good in terms of satisfaction and happiness (Eid & Larsen, 2008; Kahneman et al., 1999). It is made up of two domains: emotional well-being and positive functioning (Keyes et al., 2003) and is defined as a person's cognitive, and affective evaluations of his or her life. These evaluations include emotional reactions to events as well as cognitive judgments of satisfaction and

fulfillment (Diener et al., 2009). Subjective well-being is composed of three dimensions: Positive affect, negative affect, and life satisfaction (Keyes et al., 2002).

The eudemonic dimension is actualized in a number of models, one of which is called "psychological well-being" and is known as Ryff's model. It consists of six distinct dimensions: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff, 1989; Ryff & Singer, 2008). Ryff's model of well-being makes it possible to measure and assess well-being in relation to aging (Chandler & Robinson, 2014). Psychological well-being encompasses the individual's resources and individual needs to cope with the existential challenges of one's life (Keyes et al., 2002).

The third component of well-being is the construct of "social well-being", and it has five dimensions: social integration, social contribution, social coherence, social actualization, and social acceptance (Keyes, 1998). According to Keyes (1998), age and education promote social well-being; in other words, knowledge, skills, and experiences gained through education and aging are assets that help the individual to cope with the challenges of his or her social life.

Subjective and psychological well-being are qualities people can lean on when they have to cope with their anxieties and adjust to them (Shmotkin & Shrira, 2013). Recent meta-analyses indicate that subjective well-being is related to physical functioning and survival in the general population, among patients, and especially, among older adults (Chida & Steptoe, 2008; Lamers et al., 2012; Pressman & Cohen, 2005; Veenhoven, 2008). Similarly, psychological well-being has advantages that are related to physical health. Findings from recent longitudinal epidemiological studies have shown that older adults who have a meaningful occupation, enjoy health advantages: they live longer, their physiological system suffers fewer impairments, they are less affected by disease outcomes, they have healthier genetic profiles, and they adopt preventive health practices (Ryff et al., 2016).

The unique attributes of subjective and psychological well-being resolve the disturbing contradiction between the frightening and callous world people feel that they live in, and between people's ability to live happily, in spite of everything, and enjoy a meaningful life (Shmotkin, 2005). This corresponds with Keyes's definition of social well-being according to which well-being is "the absence of negative conditions and feelings, the result of adjustment and adaptation to a hazardous world" (Keyes, 1998, p. 121). Shmotkin, Shrira, and colleagues (Shmotkin, 2005, 2011; Shmotkin & Shrira, 2012; Shrira et al., 2011), have developed a theory that describes how well-being can help in times of adversity. According to this theory,

once people perceive that their physical and mental safety is threatened, whether these threats are real or potential, they will aggregate these threats into an image that Shmotkin (2005) has titled the "hostile world scenario". According to the study by Shrira and colleagues (Shrira et al., 2011), the relationship between subjective well-being and meaning in life (a central component of psychological well-being) becomes stronger as the more the threat (or the hostile world scenario) increases. Subjective well-being together with meaning in life regulates the hostile world scenario. As a result, people are able to realize their endeavors to achieve a better life despite the existential task of living in a hostile world.

Most studies that have looked into the connection between well-being and health outcomes have found that there is such a connection. According to two literature reviews, enhanced well-being is related to improved health outcomes and lower morbidity (Lyubomirsky et al., 2005; Pressman & Cohen, 2005). A positive correlation between well-being and short-term and long-term health outcomes has been found in a study by Howell (2007). Additionally, the same findings have showed that the effect of well-being on better health outcomes was especially strong for immune system response and pain tolerance. Findings from a more recent study findings have indicated that subjective well-being can influence health, particularly health behaviors, and the immune and cardiovascular systems (Diener et al., 2017). Psychological well-being and especially optimism, was found to be related to improved outcomes of cardiovascular disease (Kubzansky et al., 2018). Findings from yet another study by Diener and colleagues (Diener et al., 2018) have indicated a correlation between enhanced subjective well-being and good health and longevity. Better well-being is associated with better glycemic control in type II diabetes, and fewer physical symptoms (Van der Does, 1996).

The abovementioned studies are just a sample of the studies that have demonstrated the connection between well-being and health outcomes. Further studies examined the possibility of inducing well-being through techniques, such as Mindfulness, Tai Chi, and Yoga in order to improve health outcomes among people and especially older adults with lower well-being (Bostock et al., 2019; Noradechanunt et al., 2017; Taylor-Piliae & Finley, 2020).

The relationship between subjective age and well-being seems to depend on a person's attitudes toward aging (Mock & Eibach, 2011). Findings show that if people believe that they have control of a certain situation, this belief may mediate the relationship between self-perception of aging and health (Levy et al., 2002). In line with this hypothesis, Stephan and his colleagues (Stephan et al., 2011) found that well-being is a mechanism that mediated the effect of subjective age on psychological resources, such as self-efficacy and inner locus of

control, as well as on health.

In line with the findings of Stephan and colleagues (2011), the present study employed Westerhof and Wurm's (2015) heuristic model in which well-being mediates the relation between subjective ageing and health outcomes. In this model, subjective aging is associated with various psychological resources, which are in turn associated with to health and survival. Patients who have a positive outlook on their age and their life expectancy, may also believe that they have a chance to live longer and recover, which will lead to a successful rehabilitation. As a result, people who think positively about their life, namely, have a younger age perception, will adopt constructive rehabilitation practices after therapeutic interventions and improve their condition.

In the current study we referred to the concept well-being as having an optimal psychological experience and functioning (Deci & Ryan, 2008). We hypothesized that well-being might mediate the relationship between subjective age and functional independence. It was measured several times (at least twice) during the rehabilitation period by mental health questionnaires (by Lamers et al., 2011) in the form of diaries. According to Keyes (2002, 2005), mental health is a syndrome of well-being symptoms. Keyes believes that "mental health is created, when an individual exhibits a high level on at least one symptom of hedonia and just over half the symptoms of eudaimonia, i.e., positive functioning in life" (Keyes, 2009, p. 15). The current study examined the correlations and interactions between all the items of well-being in the study questionnaire with emphasis on the first three items: optimism, self-worth (or self-esteem), and life satisfaction.

Research Model and Hypotheses

Based on the proposed model presented in Figure 1, we formulated the following hypotheses:

1. The central hypothesis of the current study maintains that there is a reciprocal effect between a younger subjective age and better functional independence. In other words, (a) the younger the patients subjective age at the beginning of the rehabilitation process, the better the patients' functional independence at the end of their treatment. Furthermore, (b) the better the patients' functional independence at the beginning of the rehabilitation process, the younger the patient's subjective age is at the end of their treatment.

2. Well-being in the course of the patient's rehabilitation process mediates the reciprocal relations between subjective age and functional independence. That is to say, (a) the younger the subjective age at the beginning of the rehabilitation process, the higher is the well-being during the course of the rehabilitation process will be higher, and as a result, the functional independence is better. Furthermore, (b) the better the functional independence at the beginning of the rehabilitation process, the higher the well-being is during the rehabilitation process, and as a result, the subjective age at the end of the rehabilitation process will be younger.

3. Age awareness moderates the reciprocal effects of between subjective age and functional independence. The reciprocal effect is stronger among those who have greater awareness age.

4. Age awareness moderates the indirect effects of subjective age and functional independence (through the patient's well-being). More specifically, well-being mediates the reciprocal effect of subjective age and functional independence during the rehabilitation process especially when age awareness is high.

5. Gender moderates the reciprocal relations between subjective age and functional independence during the rehabilitation process. Therefore, (a) among women, the reciprocal effect mainly drives from subjective age that relates to physical appearance and functional independence and, (b) among men, the reciprocal effect will be mainly derives from subjective age that relates to behavior and functional independence.

6. The abovementioned moderating effect of gender is especially strong among patients with elevated age awareness (an interaction between gender and age awareness). Namely, (a) the reciprocal relations between subjective age, rooted in physical appearance and functioning is found especially among women with high age awareness and, (b) the reciprocal relations between subjective age that relates to behavior and functioning is especially strong among men with high age awareness.

Figure 1. The research model.
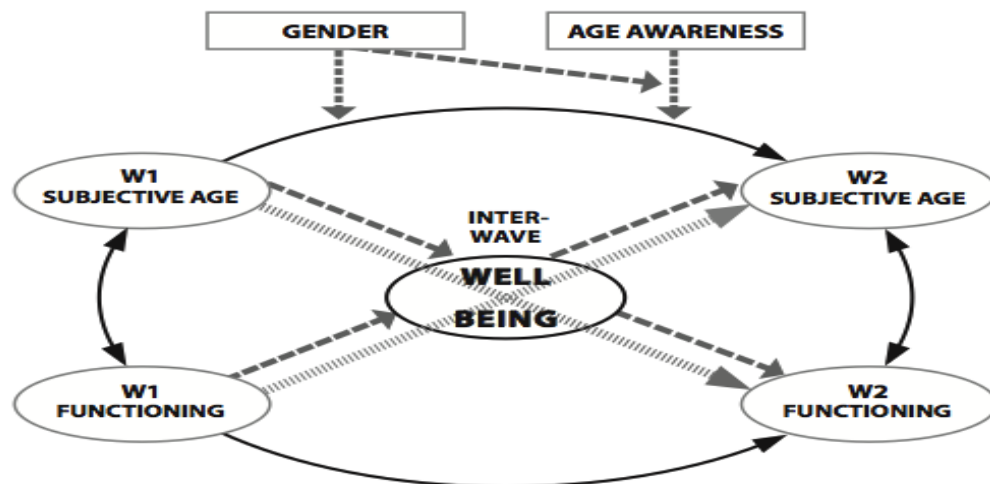
Figure 1. The research model in which the reciprocal effects of the subjective age and functional independence are mediated by well-being and moderated by gender and age awareness.

The current research model is based on Westerhof and Wurm's model (2015), which describes how subjective aging is associated with various psychological resources, which in turn are associated with physical health and survival. The current research model broadens the abovementioned model by relating to the moderating effects of gender and age awareness. The broadened model will be examined using a cross-lagged analysis looking into the causal directions between the major variables. In particular, the study will explore, whether a younger subjective age at the beginning of the rehabilitation process predicts higher functional independence at the end, whether higher functional independence at the beginning of rehabilitation predicts better functioning at the end of rehabilitation, whether a better functioning at the beginning of the rehabilitation predicts a younger subjective age at the end, whether younger subjective age at the beginning of the rehabilitation predicts a younger subjective age at the end of the rehabilitation, or whether all possibilities co-exist.

Method

Participants and Procedure

In the current study interviews were conducted with a convenience sample of older adults who were undergoing rehabilitation after hip fractures or strokes in three facilities across Israel (Fliman Geriatric Center in Haifa, Shoham Geriatric Center in Pardess-Hanna, and the Soroka Medical Center in Beer-Sheva).

The sample used in the current study is part of a research project funded by the The Israeli Ministry of Science, Technology and Space. The data collection took place between October 2016 and September 2019. The sample consisted of 193 participants. As can be seen from Table 1 which presents the socio-demographic characteristics of the study's participants, the sample consisted of participants of advanced age (Mean age = 78.32). The majority were females (64.4 %) and only 34.1 % were males. Sixty-eight percent of the participants had completed at least secondary school with 32% having an academic degree. Fifty-eight percent did not live with a partner; most of them (39.7%) were widowed. Almost half of the sample reported an average economic status, (48.50%), with 38% characterizing themselves as having a good or very good economic status. Almost 90% were either secular or traditional, and only 9% characterized themselves as religious. More than half of the participants (54.1%) rated their health as good or very good. The majority of the participants were fracture patients (71.1%) and only 22.2% had suffered from cerebrovascular accidents. 72.0 % suffered from hypertension, 32.6% had diabetes, and 13.4% suffered from depression. The number of stroke patients was 22.2% vs. 71.1% fracture patients (the rest of the patients, 6.3% were hospitalized for various neurological reasons). Most of the patients were discharged to their homes after rehabilitation (86.6%), and only 5.7% were admitted to geriatric institutions. Only 8 patients, (4.1%) were discharged for further treatment in hospitals. The average hospitalization duration was 33 days.

Inclusion criteria included being 65 years old or above, and having Hebrew proficiency. Exclusion criteria included having major cognitive impairments at the time of admission (score < 24 on the Mini Mental Status Examination scale [MMSE], Folstein et al., 1975) and not suffering from aphasia. (Appendix C, p. 115). The MMSE is an accepted measure of cognition for evaluating memory, visuospatial construction (the patients were asked to draw a clock and draw the hands at a certain time), orientation, attention, concentration, and language. Scores ranged from 0 to 30 points, with lower scores indicating worse performance. The MMSE is administered as an interview (Appendix 3, p.112).

The patients were admitted to the rehabilitation facility directly from the acute care hospital, after undergoing hip fracture surgery, or a stabilizing treatment for stroke and, were assessed by the Functional Independence Measurement [FIM] test (Keith et al., 1987; Lincacre et al., 1994., Appendix C, p.115). They were then interviewed by research assistants using the introductory questionnaire (Appendix B, p.102) containing questions on all the variables of the study, and the patient's demographic details (a 75-minute procedure). Additional short questionnaires ("diaries") were read to the patients at least twice a week (Appendix B, p. 106) during their stay at the rehabilitation facility. On admission to the rehabilitation ward and before being discharged, the patients' motoric and cognitive functioning were assessed by the Functional Independence Measurement (FIM) test.

The study was approved by the Helsinki Board in all three rehabilitation facilities (Appendix A, pp. 96-102).

Table 1. Study participants' socio-demographic characteristics

Variables		Mean (*SD*)/ *n* (%)	Range (minimum – maximum)
Age, years (n=193): mean (*SD*)		78.32 (7.90)	61-95
Gender (n=193)	Male, n (%)	68 (35.2)	
	Female, n (%)	125 (64.8)	
Marital status (n=193)	Single, n (%)	7 (3.6)	
	Married, n (%)	80 (41.2)	
	Divorced, n, (%)	28 (14.4)	
	Widowed, n, (%)	77 (39.7)	
	Living with partner, n, (%)	1 (0.5)	
Education level (n=193)	No formal education, n (%)	5 (2.6)	
	Elementary, n (%)	14 (7.2)	
	Partial high school, n (%)	42 (21.6)	
	High school, n (%)	42 (21.6)	
	Non-academic tertiary, n (%)	28 (14.4)	
	Academic, n (%)	62 (32.0)	
Socioeconomic status (n= 189)	Not good at all, n (%)	7 (3.6)	
	Not good, n (%)	14 (7.2)	
	Average, n (%)	94 (48.5)	
	Good, n (%)	62 (32.0)	
	Very good, n (%)	12 (6.2)	
Religious (n= 192)	Secular, n (%)	88 (45.4)	
	Traditional, n (%)	87 (44.8)	
	Religious, n (%)	17 (8.8)	
(SD)		(2.81)	

Notes: SD, standard deviation

Table 2 presents the participants' clinical characteristics. The participants were admitted to the rehabilitation centers after undergoing treatment for an osteoporotic fracture (71.10%) or stroke (22.20%) in a general hospital (4.91% were admitted for other reasons). More than half of the participants (54.1%) rated their health as good or very good. Most of them (84.0%) had suffered from cerebrovascular accidents, 72.0 % suffered from hypertension, 32.6% had diabetes, and 13.4% suffered from depression.

Table 2. Study participants' clinical characteristics

Variables		Mean (*SD)* /*n* (%)	Range (minimum – maximum)
Self-rated health (n= 191)	Not good at all, n (%)	22 (11.3)	
	Not good, n (%)	64 (33.0)	
	Average, n (%)	56 (28.9)	
	Good, n (%)	40 (20.6)	
	Very good, n (%)	9 (4.6)	
Body mass index (n= 153): mean (*SD*)		27.87 (5.29)	17-47
Comorbidities (n=190)	Cerebrovascular accident: n (%)	163 (84.0)	
	Other neurological: n (%)	18 (9.3)	
	Current cancer: n (%)	13 (1.5)	
	Cancer history: n (%)	24 (12.4)	
	Hypertension: n (%)	140 (72.0)	
	Diabetes: n (%)	71 (36.6)	
	Chronic obstructive pulmonary Disease: n (%)	11 (5.7)	
	Other respiratory disease: n (%)	2 (1.0)	
	Dementia: n (%)	2 (1.0)	
	Depression: n (%)	26 (13.4)	
	Nephrological issues: n (%)	31 (16.3)	
	Other: n (%)	10 (5.2)	
Hospitalization etiology (n= 190)	Stroke, n (%)	43 (22.2)	
	Fracture, n (%)	138 (71.1)	
	Other, n (%)	9 (4.6)	
Number of diseases (n=190): mean (*SD*)		2.14 (1.23)	0-6
Discharge location (n=188)	Home, n (%)	168 (86.6)	
	Geriatric institute, n (%)	11 (5.7)	
	Hospital, n (%)	8 (4.1)	
	Unknown, n (%)	1 (0.5)	

Comparing stroke and fracture patients

We ran different tests for patients with stroke and patients with fractures. According to the results, subjective age predicted FIM in the group fracture (p<.001) but not in the stroke group (p=.65). Because the size of the sample was small, we decided to assess the study models on the combined sample, and we also controlled for main diagnosis in the final models.

Attrition Analysis

Of the 193 participants who had at least two daily assessments during the rehabilitation, 89 had only one or no assessments (the attrition group). A comparison between the two groups as presented in Table 3 (those with 0-1 assessments, attrition group vs. those with 2+ assessments, study group) with t-tests for the continuous variables and chi-square tests for the non-sequential variables, showed no difference in any of the evaluated outcome measures, but for religiosity (χ^2= 9.11; p=0.02). More specifically, in comparison with the attrition group, the prevalence of secular persons in the study group was greater (36.0 % and 45.8%, respectively). The small but significant difference in religiosity between the two groups might stem from the fact that in Israel, the proportion of secular people is higher among people of higher socio-economic status compared to those of lower socio-economic status. In addition, from impressions gathered during interviews, it appeared that participants from higher socio-economic status were more willing to fully cooperate with the study, as it seemed that they internalized better the aim of the study, and were more inclined to contribute to the effort in time and attention required by the study.

Table 3. Demographic and clinical characteristics of study participants (n=193) and attrition group (n=89)

Variables		Study participants - Participants with at least 2 daily assessments: Mean (*SD*)/*n* (%)	Attrition group - participants with 0 or 1 daily assessment: Mean (*SD*)/*n* (%)	t-test (p- value) /Chi-square (p=value)
Age	Mean, SD	78.32 (7.37) (n=190)	76.86 (7.45) (n=81)	-1.48 (0.92)
Sex	Male, n (%)	68 (35.2)	36 (40.4)	0.71 (0.42)
	Female, n (%)	125 (64.8)	53 (59.6)	
Education	Mean, SD	3.34 (1.43) (n=193)	2.79 (1.38) (n=88)	-3.02 (0.08)
Economic status	Mean, SD	3.30 (0.84) (n=189)	3.07 (1.03) (n=86)	-2.00 (0.33)
Family status	Not married, n (%)	112 (58.0)	47 (52.8)	0.67 (0.44)
	Married or with partner, n (%)	81 (42.0)	42 (47.2)	
Religiousness	Secular, n (%)	88 (45.8)	31 (36.0)	9.11 (0.02)
	Traditional, n (%)	87 (45.3)	46 (53.5)	
	Religious, n (%)	17 (8.9)	6 (7.0)	
	Orthodox, n (%)	0 (0.0)	3 (3.5)	
Mean age awareness	Mean, SD	4.07 (1.51) (n=189)	4.22 (1.56) (n=69)	0.67 (0.77)
FIM - admission	Mean, SD	66.32 (15.11) (n=189)	65.51 (13.42) (n=81)	-0.41 (0.35)
FIM - discharge	Mean, SD	96.20 (14.03) (n=188)	94.22 (15.55) (n=77)	-1.01 (0.86)
Hospitalization days	Mean, SD	33.13 (15.61) (n=190)	26.07 (14.35) (n=81)	-3.48 (0.44)
Hospitalization etiology	Stroke, n (%)	43 (22.6)	18 (22.2)	0.77 (0.67)
	Fracture, n (%)	138 (72.6)	61 (75.3)	
	Other, n (%)	9 (4.7)	2 (2.5)	

Notes: FIM, Functional Independence Measure; SD, standard deviation. It was not possible to compare the groups in subjective age or well-being as these were assessed during the daily assessments.

Measures

The study measures are included in the introductory questionnaire, the final questionnaire and the diaries (Appendix B. pp. 102-111). In order to test the current study's hypotheses, only some parts of the questionnaires were used.

The main variables

Functional independence and subjective age

The nursing personnel scored the patients at both admission and at discharge from the rehabilitation facility using the Functional Independence Measurement (FIM) (Keith et al., 1987; Linacre et al., 1994). FIM is an 18-item measurement tool that assesses the

physical, psychological and social function of patients with functional mobility impairments. The maximum score of the FIM test is 126, the maximum score for physical functioning is 91, and the maximum score for cognitive- functioning is 35 (Appendix C, p. 115). The difference between these two assessments – the Delta FIM- indicated whether there was as improvement or a decline in the participant's cognitive and physical functioning.

Subjective age was assessed on admission to the rehabilitation facility, at discharge and several times during rehabilitation; participants were asked to state how old they felt most of the time. Participants completed a four-item questionnaire based on the four dimensions mentioned by Kastenbaum and colleagues (Kastenbaum et al., 1972) and by Uotinen and colleagues (Uotinen et al., 2003): physical, mental, look, and behavior age. The items were rated on a scale ranging from 1 to 5 (1="feeling much younger than my age" to 5="feeling much older than my age"). The subjective age score was the average of scores with higher scores reflecting older subjective age. Previous studies have found the scale to be reliable and valid (e.g., Barak & Stern, 1985; Choi et al., 2014; Montepare, 2009; Stephan et al., 2013). For the current study we used the first and last measurement of subjective age, which showed very good internal consistencies with alpha Cronbach's reliabilities of .86 & .90 respectively. (Appendix B, p.102, Introductory Questionnaire).

Age Awareness

Age awareness was measured in the introductory questionnaire by the age awareness scale which included four items (Montepare, 1996). These items estimated the extent to which participants felt that their age played an important role in the way they generally perceived themselves. The items were graded on a Likert-type scale ranging from :1= "Totally disagree" to 7= "Totally agree" (Montepare & Clements, 2001) so, that a high score meant high age awareness. Previous studies have found the scale to be reliable and valid (e.g., Bergman & Bodner, 2019; Rubin & Berntsen, 2006; Teuscher, 2009). In the current study, satisfactory internal consistency with alfa Cronbach's reliability of .66 was achieved. (Appendix B Introductory Questionnaire, item 28., p.102).

Well-being

Well-being was measured several times across rehabilitation by nine items that consisted of the emotional or subjective aspects of well-being (Diener et al., 1999), and psychological well-being (according to: Ryff, 1984) included in the mental health questionnaire by Lamers and colleagues (Lamers et al., 2011). The items were rated on a Likert- type scale ranging from 1= "Never", to 6= "Everyday". The final grade was the calculated average answer to those statements across rehabilitation so, that a high score meant a high level of well-being.

Previous studies have found the scale to be reliable and valid (e.g., Fledderus et al., 2012; Hone et al., 2014; Keyes & Simoes, 2012). In the current study, satisfactory internal consistency with alfa Cronbach's reliability of .66 was achieved.

Covariates

Age, education, self-rated health, medical conditions, and hospitalization etiology served as the study covariates, because these variables are potentially related to subjective aging (e.g., Shrira et al., 2014). Education was measured on a scale ranging from 0= "No formal education" to 5= "Academic education" (Appendix B p. 102 demographic questionnaire, paragraph 9/2.). The participants' health was self-reported with an answer to the question: "How would you describe your health?" and the answers were graded on a Likert-type scale ranging from 1= "Not at all good" to 5= "Very good" (Benyamini, Idler, Leventhal, & Leventhal, 2000). (Appendix B, p. 102 opening questionnaire, paragraph 11). The information about the participants' medical conditions was captured with the Charlson comorbidity index (Charlson et al., 1994).

Data Analysis

In order to test of the main study hypothesis, we performed cross-lagged analyses using AMOS 23.0 testing the reciprocal effects of subjective age and FIM. The analyses simultaneously tested the effect of subjective age on admission on FIM at discharge, as well as the effect of FIM on admission on subjective age at discharge. The model further tested the auto-regressive effects of subjective age and FIM (i.e., the effect of subjective age on admission on subjective age at discharge, as well as the effect of FIM on admission on FIM at discharge).

In order to test Hypothesis 2, the mediator variable, well-being, was included in the basic cross-lagged model so that well-being connected the effect of subjective age and FIM on admission on subjective age and FIM at discharge. We used bootstrap technique (Efron, 1979) to determine the significance of indirect effects.

In order to test Hypothesis 3, the moderator variable, age awareness, was added to the basic model. The model thus included the main effect of age awareness, as well as its interaction with either subjective age or FIM (depending on the significant paths found in Hypothesis 1) on subsequent subjective age or FIM.

In order to test Hypothesis 4, the moderator variable, age awareness, was added to the mediation model. The model thus included the main effect of age awareness, as well as its interaction with either subjective age or FIM (depending on the significant paths found in Hypothesis 1) on the mediator variable, well-being.

35

In order to test Hypothesis 5, the moderator variable, gender, was added to the basic model. The model thus included the main effect of gender, as well as its interaction with either subjective age or FIM (depending on the significant paths found in Hypothesis 1) on subsequent subjective age or FIM.

In order to test Hypothesis 6, both moderators, age awareness and gender, were added to the basic model. The model thus included the main effects of age awareness and gender, as well as their interactions with either subjective age or FIM (depending on the significant paths found in Hypothesis 1) on subsequent subjective age or FIM. Possible two-way interactions and the three-way interactions were included. The analyses for Hypotheses 5-6 included the dimensions of appearance (look age) and subjective behavior age.

As the most elaborate model included 11 variables (1 covariate: chronological age; 4 main variables: subjective age and FIM at both admission and discharge; 2 moderators: gender and age awareness; 4 possible interactions: subjective age X age awareness, subjective age X gender, age awareness X gender, subjective age X age awareness X gender), the longitudinal sample size was adequate to test all models (according to the 15 participants-per-variables rule; cf. Buhi et al., 2007). When adding all 5 covariates: age, education, self-rated health, medical conditions, and main reason for hospitalization, the sample size was marginally sufficient to test the models, therefore the main analyses were performed with and without covariates.

Following the recommendations of Hu and Bentler (1999), model fit was assessed by the Chi-square value divided by degrees of freedom (χ^2/df), and by the Comparative Fit Index (CFI), the root mean square error of approximation (RMSEA) including its 90% confidence intervals (CIs), and the standardized root mean residual (SRMR). Although there is no consensus regarding an acceptable ratio for χ^2/df, common recommendations range from as high as 3.0 to as low as 2.0 (Hooper et al., 2008). Scores above .95 indicate good fit for CFI, and values below .08 indicate good fit for RMSEA and SRMR (Hu & Bentler, 1999).

Results

Testing the study hypotheses

Hypothesis 1 – Reciprocal effects for subjective age and FIM.

Our first major hypothesis pertained to the cross-lagged relationships between subjective age and FIM scores. After testing the study model (Figure 2) it turned out that the model exhibited an excellent fit, χ^2/df=1.36 (χ^2=5.47, df=4), CFI=0.99, RMSEA=0.047, 90%CI=.000, .133, SRMR=0.032.

Table 4 presents the selected parameters for that model. Although a bidirectional effect was expected, the results have indicated a one-way effect: Subjective age on admission predicted FIM scores at discharge, but not vice versa (i.e., FIM scores on admission did not predict subjective age at discharge). Those who felt older at the beginning of the rehabilitation had lower FIM scores at discharge. Moreover, the auto-regression effects were significant: subjective age on admission predicted subjective age at discharge, and FIM on admission predicted FIM at discharge. That being the case, the results confirm the first part of Hypothesis 1.

Table 4. Selected Parameters for the Study Model (Hypothesis 1). Need to change the no according to the new PDF H1

Covariance			B	B	SE	P
Age	↔	Gender-	-0.03	-	0.28	0.66
Subjective age Admission	↔	FIM Admission	-0.10	-	0.84	0.21 1
Subjective age Discharge	↔	FIM Discharge	-0.17	-	0.53	0.03
Regression Weights						
Age	→	Subjective age Admission	0.003	0.03	0.01	0.70
Age	→	FIM Admission	-0.35	-0.17	0.16	0.03
Gender	→	Subjective age Admission	-0.06	-0.04	0.1 2	0.61
Gender	→	FIM Admission	1.21	0.04	2.4 2	0.6 4
Subjective age Admission	→	Subjective age Discharge	0.35	0.38	0.07	<0.001
FIM Admission	→	FIM Discharge	0.55	0.59	0.06	<0.001
Subjective age Admission	→	FIM Discharge	-5.39	-0.27	1.16	<0.001
FIM Admission	→	Subjective age Discharge	0.000	0.01	0.003	0.89

Notes: FIM, Functional Independence Measure

The association between subjective age at admission and FIM scores at discharge (a significant bias-corrected standardized indirect effect of -.06 (95% lower and higher confidence intervals were -.13 and -.02, respectively).

Figure 2. The study model (Hypothesis 1)
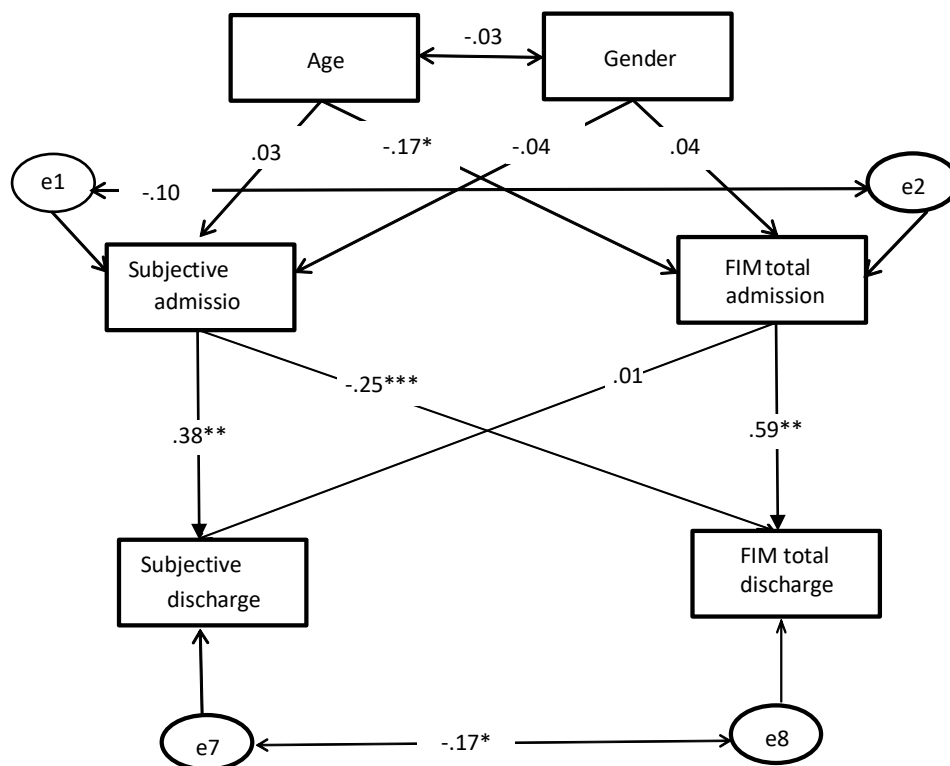
Notes: FIM - functional Independence Measure – total; * *p* < .05, ** *p* < .01 , *** *p* < .001

Hypothesis 2 – Well-being mediates the reciprocal effects between subjective age and FIM

The second hypothesis pertained to the cross-lagged mediating effect of well-being. Namely, (a) the younger the subjective age on admission, the higher the well-being in the course of the rehabilitation process, and as a result, the better the FIM scores at discharge. Furthermore, (b) the better the FIM score on admission, the higher the well-being during the rehabilitation process, and as a result, the younger the subjective age will be at discharge (Figure 3).

Our sample consisted of 283 patients but only 193 had two diaries and only 170 had all the variables. The model exhibited a partial fit, χ^2/df=2.40 (χ^2=19.27, *df*=8, *p*=0.01), CFI=0.93, RMSEA=0.09, 90% CI=.003, .14, SRMR=0.05. Table 5 presents the selected parameters for that model. The results confirm the first part of Hypothesis 2, as subjective age on admission predicted wellbeing during rehabilitation, and wellbeing predicted FIM scores at discharge. More specifically, those who felt older on admission had lower wellbeing scores during rehabilitation, and those with lower wellbeing had lower FIM scores at discharge. In addition, the direct effect of subjective age on admission on FIM scores at discharge was significant.

Moreover, wellbeing mediated the association between subjective age at admission and FIM scores at discharge (a significant bias-corrected standardized indirect effect of -.06 (95% lower and higher confidence intervals were -.13 and -.02, respectively).

However, the second part of the Hypothesis 2 was not confirmed. FIM scores on admission did not predict wellbeing during rehabilitation. In addition, although wellbeing predicted subjective age at discharge, it did not mediate the association between FIM scores on admission and subjective age at discharge (a non-significant bias-corrected standardized indirect effect of -.01 (-.05, .02).

Table 5. Selected Parameters for the Study Model (Hypothesis 2).

Covariance			B	B	SE	P
Age	↔	Gender	-0.01	-	0.27	0.85
Subjective age Admission	↔	FIM Admission	-0.10	-	0.81	0.18
Subjective age Discharge	↔	FIM Discharge	-0.13	-	0.52	0.09
Regression Weights						
Age	→	Subjective age Admission	0.004	0.04	0.007	0.62
Age	→	FIM Admission	-0.33	-0.16	0.15	0.03
Gender	→	FIM Admission	-1.28	-0.04	2.32	0.58
Gender	→	Subjective age Admission	0.09	0.06	0.11	0.40
Subjective age Admission	→	Wellbeing during rehabilitation	-0.70	-0.38	0.13	<0.001
FIM Admission	→	Wellbeing during rehabilitation	0.003	0.04	0.006	0.59
Subjective age Admission	→	Subjective age Discharge	0.25	0.27	0.07	<0.001
Subjective age Admission	→	FIM Discharge	-4.74	-0.24	1.12	<0.001
FIM Admission	→	FIM Discharge	0.57	0.60	0.05	<0.001
FIM Admission	→	Subjective age Discharge	0.00	0.02	0.00	0.76
Wellbeing during rehabilitation	→	FIM Discharge	1.68	0.16	0.63	0.007
Wellbeing during rehabilitation	→	Subjective age Discharge	-0.12	-0.24	0.04	0.001

Notes: FIM, Functional Independence Measure

Figure 3. The study model (Hypothesis 2)
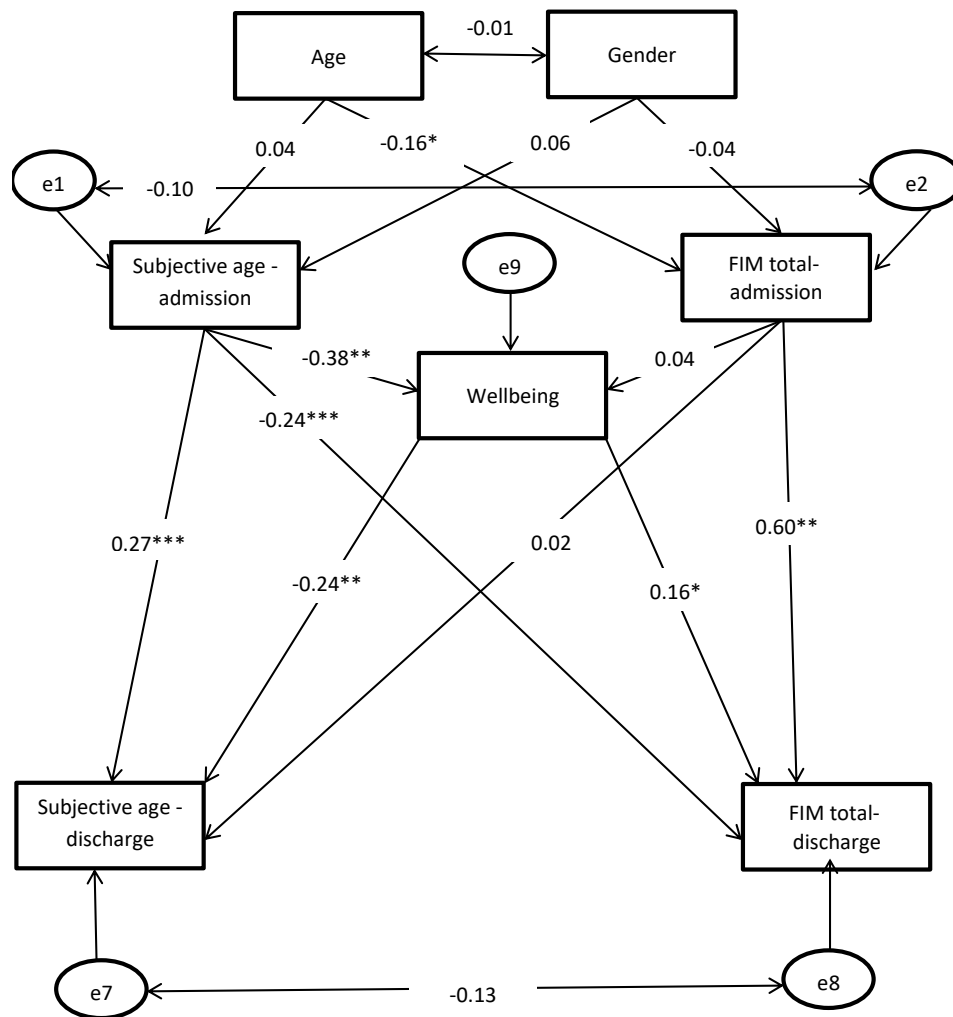
Notes: FIM, Functional Independence Measure; *p<.05, **p<.01, ***p<.001

Hypothesis 3 - Age awareness moderates the reciprocal effects of subjective age and functional independence

Before testing the model, we examined the correlations between age awareness and the other major study variables. Unexpectedly, a significant gender difference was found in age awareness (t(187) = 2.45, p < .05). Men had higher age awareness (M = 4.43, SD = 1.53) compared to women (M = 3.88, SD = 1.48).

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 7 for selected model coefficients and Figure 4 for the graphic description of the model). The resulting model exhibited a non-optimal yet acceptable fit in some of the indices (χ^2 = 15.91, df = 9, p = .06;

χ^2/df = 1.76; NFI = .90, CFI = .95, RMSEA = .06, 90%CI=.000, .11, SRMR=0.04). When we correlated between error terms for subjective age and FIM, the model fit did not change in a significant way. No significant correlations existed between age and gender, or between subjective age and FIM at both admission and discharge, and between age awareness and FIM on admission. One weak significant positive correlation was found between age awareness and subjective age on admission ($r_{(172)}$ = .17, p < .05), meaning that higher age awareness was related to feeling older on admission. Finally, the Age Awareness X Subjective age interaction did not correlate significantly with age awareness, subjective age, and FIM on admission.

The model regression paths demonstrated that gender did not predict subjective age and FIM on admission. Age did not predict subjective age on admission; however, older age predicted lower FIM on admission (β = -.16, p < .05). Higher FIM on admission predicted higher FIM at discharge (β = .60, p < .001), but FIM on admission had no association with subjective age at discharge (β = -.02, p > .05). Older subjective age on admission predicted older subjective age at discharge (β = .38, p < .001) and lower FIM at discharge (β = -.25, p < .001). It was hypothesized that age awareness would moderate the effect of subjective age on admission on FIM at discharge, however, both age awareness and the age awareness X subjective age on admission interaction were not associated with FIM at discharge. Therefore, Hypothesis 3 was not supported.

Figure 4. The study model (Hypothesis 3)

* p < .05, ** p < .01, *** p < .001
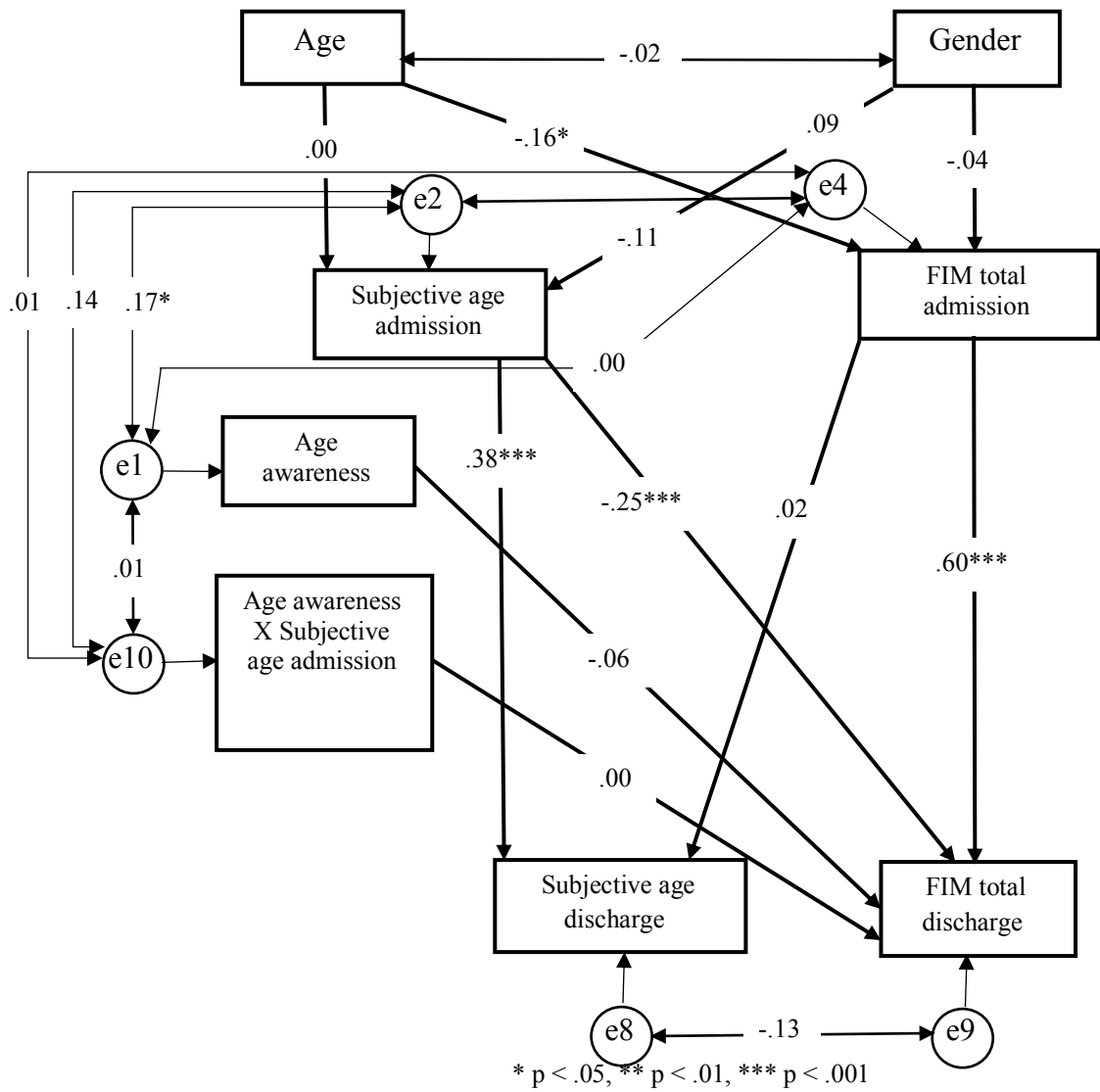
Table 6. Age awareness correlations with subjective age, FIM, and gender

Variables		Age awareness
FIM	Admission	-.01
	Discharge	-.06
Mean subjective age	Admission	.16*
	Discharge	.01
Age		.11

<div align="right">* <i>p</i> < .05</div>

Table 7. Regression Weights for Hypothesis 3 Model

Predictor		Outcome	B	B	SE	p
Age	→	Subjective age admission	.00	.00	0.01	.97
Age	→	FIM admission	-0.33	-.16	0.15	.03
Gender	→	Subjective age admission	0.13	.09	0.11	.25
Gender	→	FIM admission	-1.11	-.04	2.41	.64
Subjective age admission	→	Subjective age discharge	0.35	.38	0.07	<.001
FIM admission	→	FIM discharge	0.55	.60	0.05	<.001
Subjective age admission	→	FIM discharge	-4.84	-.25	1.13	<.001
FIM admission	→	Subjective age discharge	0.00	-.02	0.00	.77
Age awareness	→	FIM discharge	-0.17	-.02	0.52	.74
Age awareness X Subjective age admission	→	FIM discharge	0.05	.00	0.70	.94

Hypothesis 4 - Age awareness moderates the indirect effect on subjective age and functional independence as mediated by well-being

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 8 for selected model coefficients and Figure 5 for the graphic description of the model). The resulting model exhibited non-optimal yet acceptable fit in some of the fit indices (χ^2 = 29.31, df = 15, p = .01; χ^2/df = 1.95; NFI = .86, CFI = .91, RMSEA = .07, 90%CI=.03, .11, SRMR=0.05). When we correlated between error terms for subjective age and FIM, the model fit did not change in a significant way. No significant correlations existed between age and gender, or between subjective age and FIM on admission and at discharge, and age awareness and FIM on admission. One weak significant positive correlation was found between age awareness and subjective age on admission ($r_{(172)}$ = .17, p < .05), meaning that higher age awareness was related to feeling older on admission. Finally, the Age Awareness X Subjective age

interaction did not correlate significantly with age awareness, subjective age, and FIM on admission.

The model regression paths demonstrated that gender did not predict subjective age or FIM on admission and by extension at discharge. Age did not predict subjective age on admission (and by extension, at discharge); however, older age predicted lower FIM on admission ($\beta = -.16$, $p < .05$). Higher FIM on admission predicted higher FIM at discharge ($\beta = .61$, $p < .001$), but FIM on admission had no association with well-being ($\beta = .05$, $p > .05$). Younger subjective age on admission predicted higher well-being ($\beta = -.39$, $p < .001$). Age awareness and the age awareness X subjective age on admission interaction did not predict well-being ($\beta = .12$, $p > .05$ and $\beta = .02$, $p > .05$ respectively). Higher well-being predicted higher FIM at discharge ($\beta = .17$, $p < .01$), and predicted younger subjective age at discharge ($\beta = -.23$, $p < .01$). Finally, older subjective age on admission predicted older subjective age at discharge ($\beta = .27$, $p < .001$). It was hypothesized that age awareness would moderate the effect of subjective age on admission and FIM at discharge, as mediated by the well-being, however, both age awareness and the Age Awareness X Subjective age on admission interaction were not associated with well-being. Therefore, Hypothesis 4 was not supported.
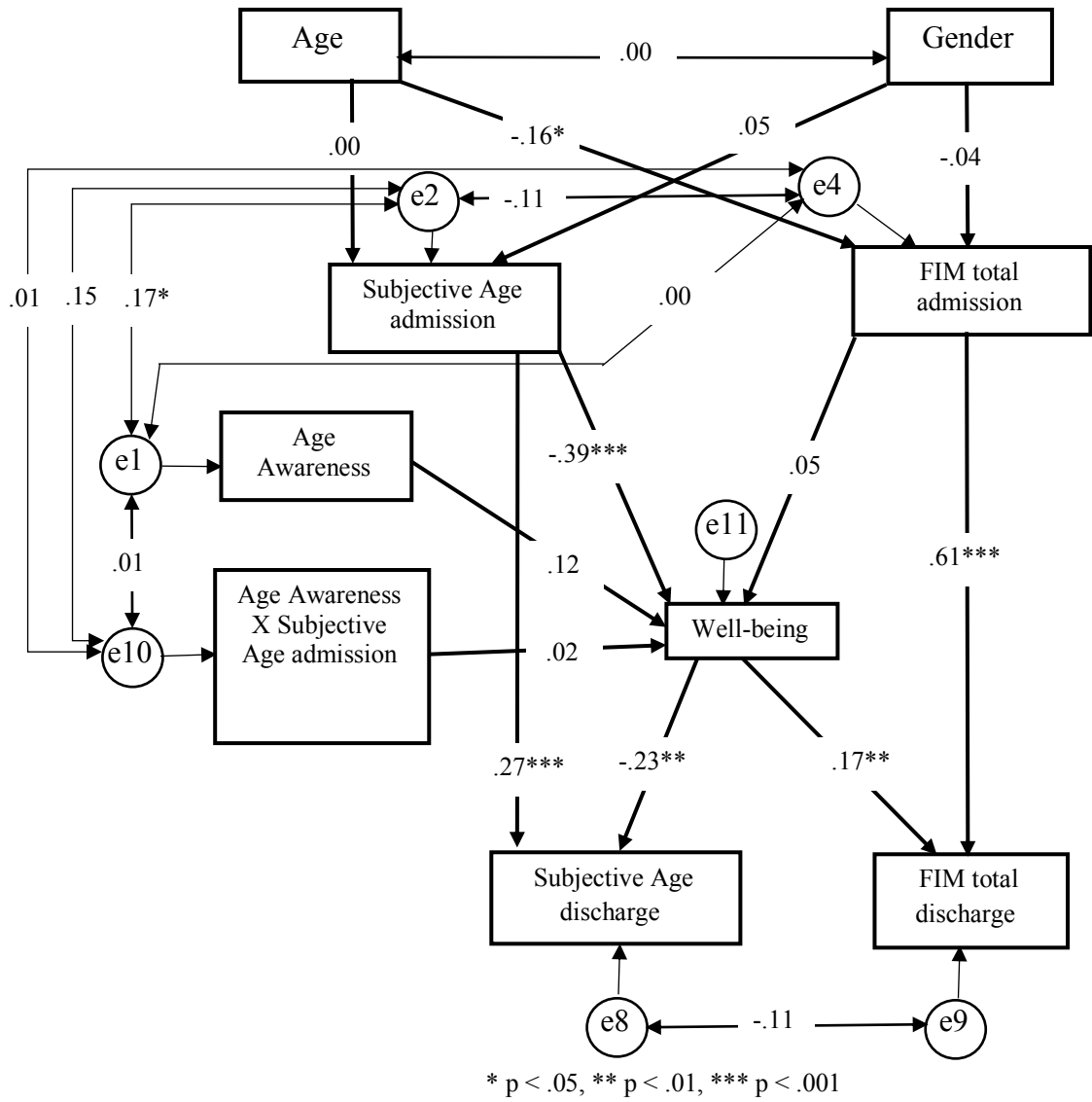
Figure 5. The study model (Hypothesis 4)

* p < .05, ** p < .01, *** p < .001

Table 8. Regression Weights for Hypothesis 4 Model

Predictor		Outcome	B	B	SE	P
Age	→	Subjective age admission	.00	.00	0.01	.97
Age	→	FIM admission	-0.33	-.16	0.15	.03
Gender	→	Subjective age admission	0.08	.05	0.11	.48
Gender	→	FIM admission	-1.14	-.04	2.36	.63
Subjective age admission	→	Well-being	-0.72	-.39	0.13	<.001
FIM admission	→	Well-being	0.00	.05	0.01	.52
Age awareness	→	Well-being	0.11	.12	0.06	.08
Age awareness X Subjective age admission	→	Well-being	0.02	.02	0.08	.82
Subjective age admission	→	Subjective age discharge	0.25	.27	0.07	<.001
FIM admission	→	FIM discharge	0.57	.61	0.05	<.001
Well-being	→	FIM discharge	1.80	.17	0.62	.004
Well-being	→	Subjective age admission	-0.12	-.23	0.04	.002

Hypothesis 5: Gender moderates the reciprocal effects of subjective "look age" (H5a) and subjective "behave age" (H5b) and functional independence during the rehabilitation process.

<u>Hypothesis 5a</u>

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 9 for selected model coefficients and Figure 6 for the graphic description of the model). The resulting model exhibited a good fit (χ^2=6.25, df =5, p = .28; χ^2/df=1.25; NFI = 0.95, CFI=0.98, RMSEA=0.04, 90%CI=.000, .131, SRMR=0.05). No significant correlations existed between gender and subjective "look age" and FIM on admission. A weak negative correlation between subjective 'look age' and FIM at discharge was found, ($r_{(172)}$ = -.18, $p < .05$), meaning that older subjective look age was related to lower FIM scores at discharge. Finally, the Gender X Subjective "look age" interaction did not correlate significantly with gender and FIM on admission.

The model regression paths demonstrated that age did not associate with gender (β = .02, $p > .05$) or subjective 'look age' on admission (β = .06, $p > .05$); however, older subjective 'look age' associated with lower FIM scores on admission (β = -.22, $p < .05$).

Higher FIM scores on admission predicted higher FIM scores at discharge (β = .61, p < .001), but FIM scores on admission had no association with subjective 'look age' at discharge (β = .04, p > .05). Younger subjective 'look age' on admission predicted younger subjective 'look age' at discharge (β = .40, p < .001) and higher FIM scores at discharge (β = -.26, p < .001). Finally, gender and the Gender X Subjective 'look age' interaction on admission did not predict FIM scores at discharge (β = .07, p > .05, and β = -.03, p > .05, respectively). Therefore, Hypothesis 5a that gender would moderate the reciprocal effect of subjective 'look age' on admission and FIM scores at discharge, was not supported.
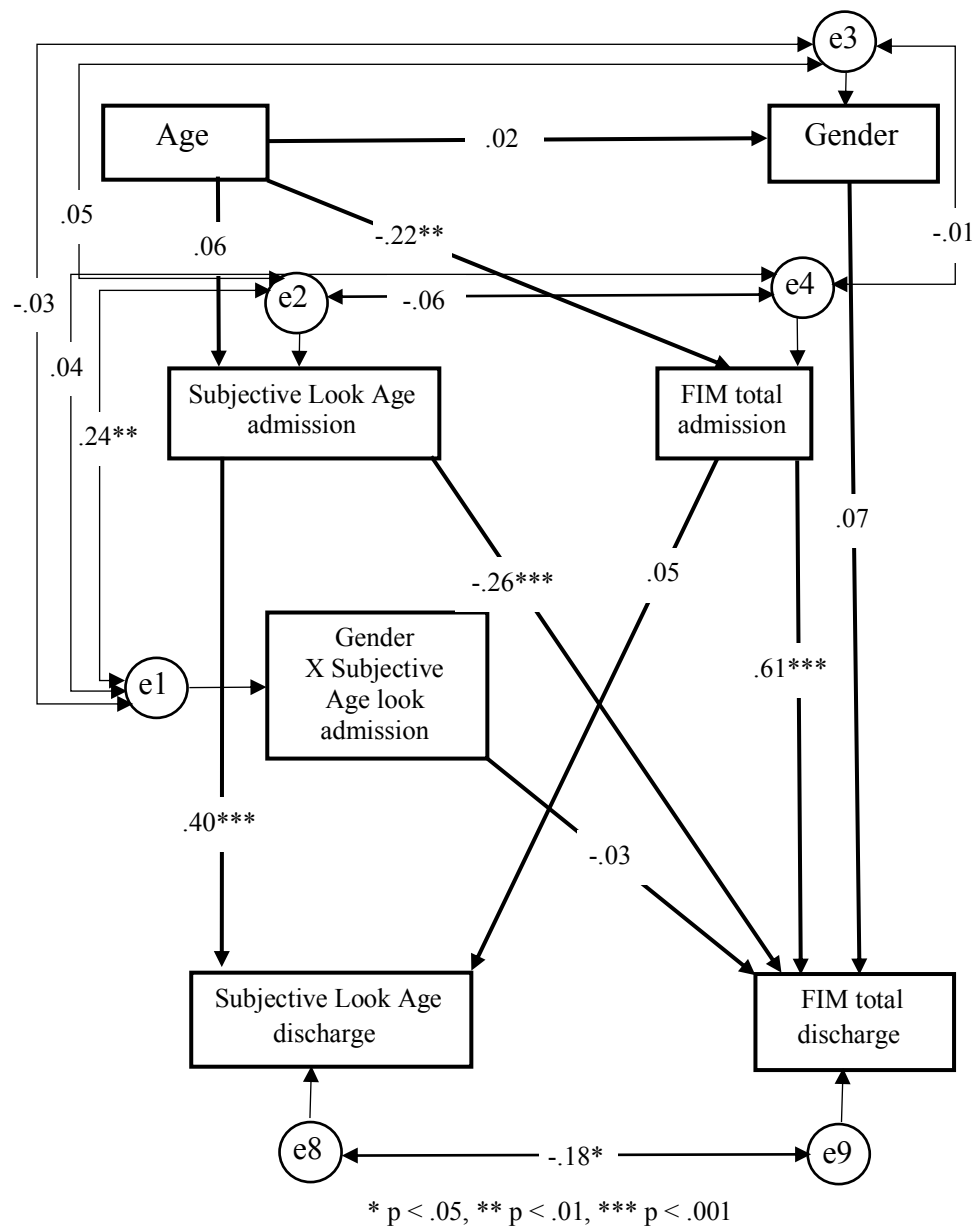
Figure 6. The study model (Hypothesis 5a)

* p < .05, ** p < .01, *** p < .001

Table 9. Regression Weights for Hypothesis 5a Model

Predictor		Outcome	B	β	SE	P
Age	→	Subjective Look Age admission	0.01	.06	0.01	.47
Age	→	FIM admission	-0.43	-.22	0.16	.01
Age	→	Gender	0.00	.02	0.01	.81
Subjective Look Age admission	→	Subjective Look Age discharge	0.33	.40	0.06	<.001
FIM admission	→	FIM discharge	0.59	.61	0.06	<.001
Subjective Look Age admission	→	FIM discharge	-4.31	-.26	1.08	<.001
FIM admission	→	Subjective Look Age discharge	0.00	.04	0.00	.61
Gender	→	FIM discharge	2.21	.07	1.85	.23
Gender X Subjective Look Age admission	→	FIM discharge	-0.95	-.03	2.42	.70

Hypothesis 5b

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 10 for selected model coefficients and Figure 7 for the graphic description of the model). The resulting model exhibited very good fit (χ^2=4.33, df=5, p= .50; χ^2/df=0.87; NFI= .97, CFI= 1.00, RMSEA= 0.00, 90%CI=.000, .10, SRMR=0.02). No significant correlations existed between gender and subjective "behave age" and FIM scores on admission, and between subjective "behave age" and FIM scores at discharge. Finally, the Gender X Subjective 'behave age' interaction did not correlate significantly with gender and FIM on admission.

The model regression paths demonstrated that age was not associated with gender (β = .03, p > .05) or subjective "behave age" on admission (β = .08, p > .05); however, older subjective age was associated with lower FIM scores on admission (β = -.23, p < .05). Higher FIM scores on admission predicted higher FIM scores at discharge (β = .61, p < .001), but FIM on admission had no association with subjective 'behave age' at discharge (β = .09, p > .05). Younger subjective "behave age" on admission predicted younger subjective 'behave age' at discharge (β = .30, p < .001) and higher FIM at discharge (β = -.27, p < .001). Finally, gender and the Gender X Subjective 'behave age' on admission interaction did not predict FIM at discharge (β = .09, p > .05, and β = -.06, p > .05, respectively). Therefore, Hypothesis 5b that gender would moderate the effect of subjective 'behave age' on admission and FIM at discharge, was not supported.

Figure 7. The study model (Hypothesis 5b)

Age

Gender

.03

.14

-.01

.08

-.23**

-.10

e2

-.10

e4

e3

Subjective Behavioral Age admission

FIM total admission

.09

-.13

.24**

-.27***

.09

.61***

.09

e1

Gender X Subjective Behavioral Age admission

-.06

.30***

Subjective Behavioral Age discharge

FIM total discharge

e8

e9

-.13
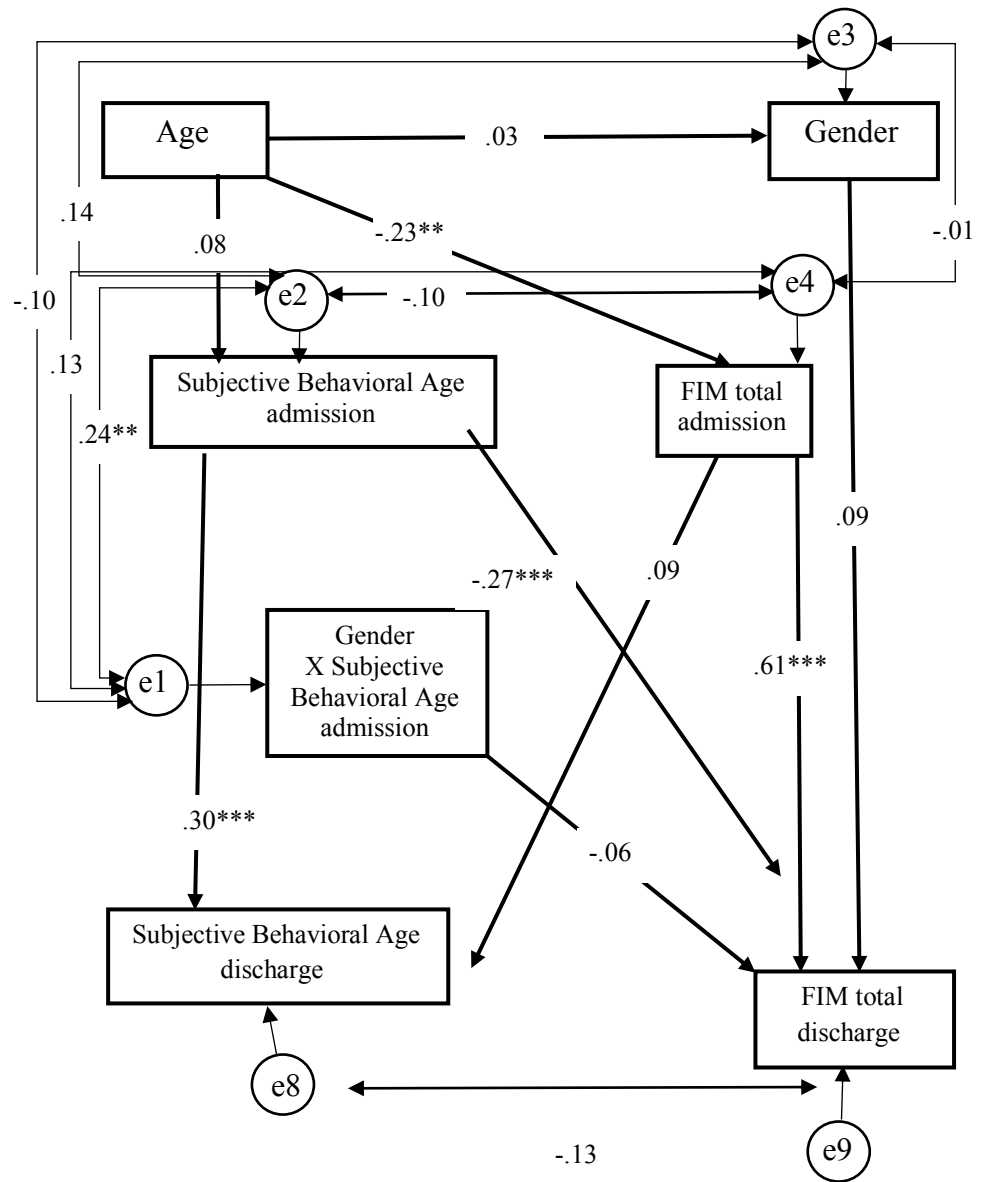
* p < .05, ** p < .01, *** p < .001

Table 10. Regression Weights for Hypothesis 5b Model

Predictor		Outcome	B	β	SE	P
Age	→	Subjective Behavioral Age admission	0.01	.08	0.01	.31
Age	→	FIM admission	-0.44	-.23	0.16	.01
Age	→	Gender	0.00	.03	0.01	.77
Subj Behavioral Age admission	→	Subj Behavioral Age discharge	0.29	.30	0.08	<.001
FIM admission	→	FIM discharge	0.58	.61	0.06	<.001
Subj Behavioral Age admission	→	FIM discharge	-4.89	-.27	1.15	<.001
FIM admission	→	Subj Behavioral Age discharge	0.01	.09	0.00	.26
Gender	→	FIM discharge	2.74	.09	1.87	.14
Gender X Subj Behavioral Age admission	→	FIM discharge	-2.25	-.06	2.61	.39

Hypophysis 6 - The moderating force of gender on the effects between subjective "behave age", subjective "look age" and FIM at discharge is stronger among patients with high age awareness

Hypothesis 6a

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 11 for selected model coefficients and Figure 8 for the graphic description of the model). The resulting model exhibited a good fit (χ^2= 14.96, *df*= 13, *p*= .31; χ^2/df= 1.15; NFI= .94, CFI= .99, RMSEA= .03, 90%CI=.000, .09, SRMR=0.03). A significant negative weak correlation existed between gender and age awareness ($r_{(172)}$= -.18, *p*< .05), signifying that women were more aware of their age than men. In addition, a marginally significant weak positive correlation existed between subjective 'look age' on admission and age awareness ($r_{(172)}$= -.17, *p*= .05), meaning that higher age awareness was related to feeling older on admission. Finally, a significant weak negative correlation existed between subjective 'look age' and FIM total at discharge ($r_{(172)}$= -.18, *p*< .05), meaning that older subjective 'look age' at discharge was related to lower FIM at discharge. All other significant correlations were between the different interaction combinations, and were therefore of no consequence. No other significant meaningful correlations existed.

The model regression paths demonstrated that age was not associated with gender, nor did it predict subjective "look age" on admission. However, older subjective age predicted lower FIM on admission ($\beta= -.22$, $p< .05$). Higher FIM on admission predicted higher FIM at discharge ($\beta= .60$, $p< .001$), but FIM on admission had no association with subjective 'look age' at discharge ($\beta= .04$, $p> .05$). Older subjective "look aged" on admission predicted older subjective 'look age' and lower FIM at discharge ($\beta= .40$, $p< .001$, and $\beta= -.30$, $p< .001$, respectively). The latter effect was not moderated by gender or age awareness, as the Gender X Subjective "look age" interaction ($\beta= .04$, $p> .05$) and the Age Awareness X Subjective "look age" interaction ($\beta= .01$, $p> .05$) were non-significant. Additionally, gender and age awareness did not predict FIM at discharge ($\beta= .10$, $p> .05$, and $\beta= -.01$, $p> .05$, respectively). Nor was there a significant Gender X Age awareness interaction ($\beta= -.05$, $p> .05$). However, the three-way Gender X Age Awareness X Subjective 'look age' interaction significantly predicted FIM at discharge ($\beta= -.14$, $p< .05$).

A simple slope analysis of this three-way interaction was conducted on the four gender [male, female] X age awareness [high, low] groups. It revealed that among respondents with low age awareness, the effect of subjective 'look age' on admission on FIM at discharge was much stronger among women ($n= 55$, $\beta= -.30$, $p< .01$) than among men ($n= 22$, $\beta= -.14$, $p> .05$). Moreover, among respondents with high age awareness, the effect of subjective "look age" on admission on FIM at discharge was similar among women ($n= 37$, $\beta= -.26$, $p< .05$) and men ($n= 29$, $\beta= -.23$, $p> .05$).

It was hypothesized that the combination of gender and age awareness would moderate the effect of subjective "look age" on admission and FIM at discharge, and indeed it did but not exactly as expected. Whereas it was hypothesized that the effect of look age on FIM would be the strongest among women with high age awareness, the interaction showed that the effect of look age on FIM was relatively similar across gender and age awareness groups except for men with low age awareness (where the effect was smaller and non-significant).

51

Figure 8. The study model (Hypothesis 6a)
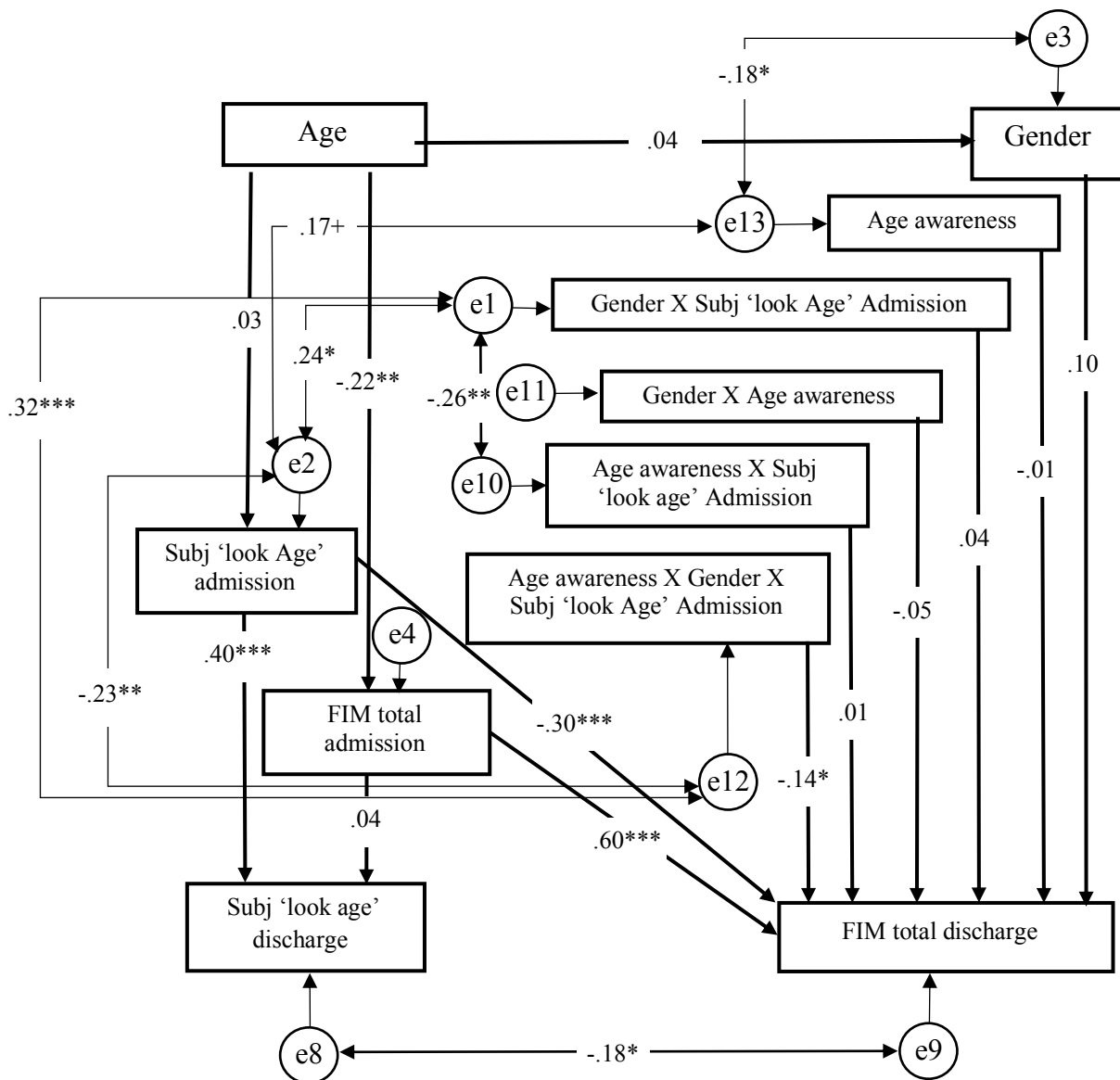
Note: to avoid clutter, non-significant correlations between unobserved exogenous variables are not shown.

+ p = .051, * p < .05, ** p < .01, *** p < .001

Table 11. Regression Weights for Hypothesis 6a Model

Predictor	Outcome	B	B	SE	P
Age	→ Subj Look age admission	0.00	.03	0.01	.68
Age	→ FIM admission	-0.42	-.22	0.16	.01
Age	→ Gender	0.00	.04	0.01	.64
Subj Look age admission	→ Subj Look age discharge	0.33	.40	0.06	<.001
FIM admission	→ FIM discharge	0.58	.60	0.06	<.001
Subj Look age admission	→ FIM discharge	-5.09	-.30	1.19	<.001
FIM admission	→ Subj Look age discharge	0.00	.04	0.00	.61
Gender	→ FIM discharge	3.00	.10	1.88	.11
Gender X Subj Look age admission	→ FIM discharge	1.63	.04	2.82	.56
Age Awareness X Subj Look age admission	→ FIM discharge	0.09	.10	0.74	.90
Gender X Age Awareness	→ FIM discharge	-0.96	-.05	1.23	.44
Gender X Subj Look age admission X Age Awareness	→ FIM discharge	-3.22	-.14	1.63	<.05
Age X Age Awareness	→ FIM discharge	-0.10	-.01	0.59	.86

Hypothesis 6b

The hypothesis was tested using path analysis in the AMOS program. A path model was used to reflect the different relationships as hypothesized (see Table 12 for selected model coefficients and Figure 9 for the graphic description of the model). The resulting model exhibited a very good fit (χ^2= 10.84, *df*= 13, *p*= .63; χ^2/df= 0.83; NFI= .95, CFI= 1.00, RMSEA= .00, 90%CI=.000, .07, SRMR=0.03). A significant negative weak correlation existed between gender and age awareness ($r_{(172)}$= -.18, *p*< .05), signifying that women were more age aware than men. All other significant correlations were between the different interaction combinations, and were therefore of no consequence. No other significant meaningful correlations existed.

The model regression paths demonstrated that age was not associated with gender or subjective "behave age" on admission. However, older subjective age predicted lower FIM on admission (β= -.22, *p*< .05). Higher FIM on admission predicted higher FIM at discharge (β= .60, *p*< .001), but FIM on admission had no association with subjective 'behave age' at discharge (β= .09, *p*> .05). Older subjective "behavior age" on admission predicted older subjective "behave age" and lower FIM at discharge (β= .30, *p*< .001, and β= -.30, *p*< .001, respectively). The effect of "behave age" on FIM was neither moderated by the two-way interactions of Gender X Subjective 'behavior age' (β= .00, *p*> .05), and Age Awareness X Subjective "behave age" on admission (β= .06, *p*> .05) nor was it moderated by the three-way interaction: Gender X Age Awareness X Subjective 'behave age' on admission (β= -.11, *p*> .05). Finally, gender and age awareness did not predict FIM at discharge (β= .12, *p*> .05, and

β= .02, *p*> .05, respectively). Nor was there a two-way Gender X Age awareness interaction
(β= -.07, *p*> .05).

It was hypothesized that the combination of gender and age awareness would
moderate the effect of subjective 'behave age' on admission and FIM at discharge. However,
no two-way or three-way interactions predicted FIM at discharge. Therefore, Hypothesis 6b
was not supported.

Figure 9. The study model (Hypothesis 6b)
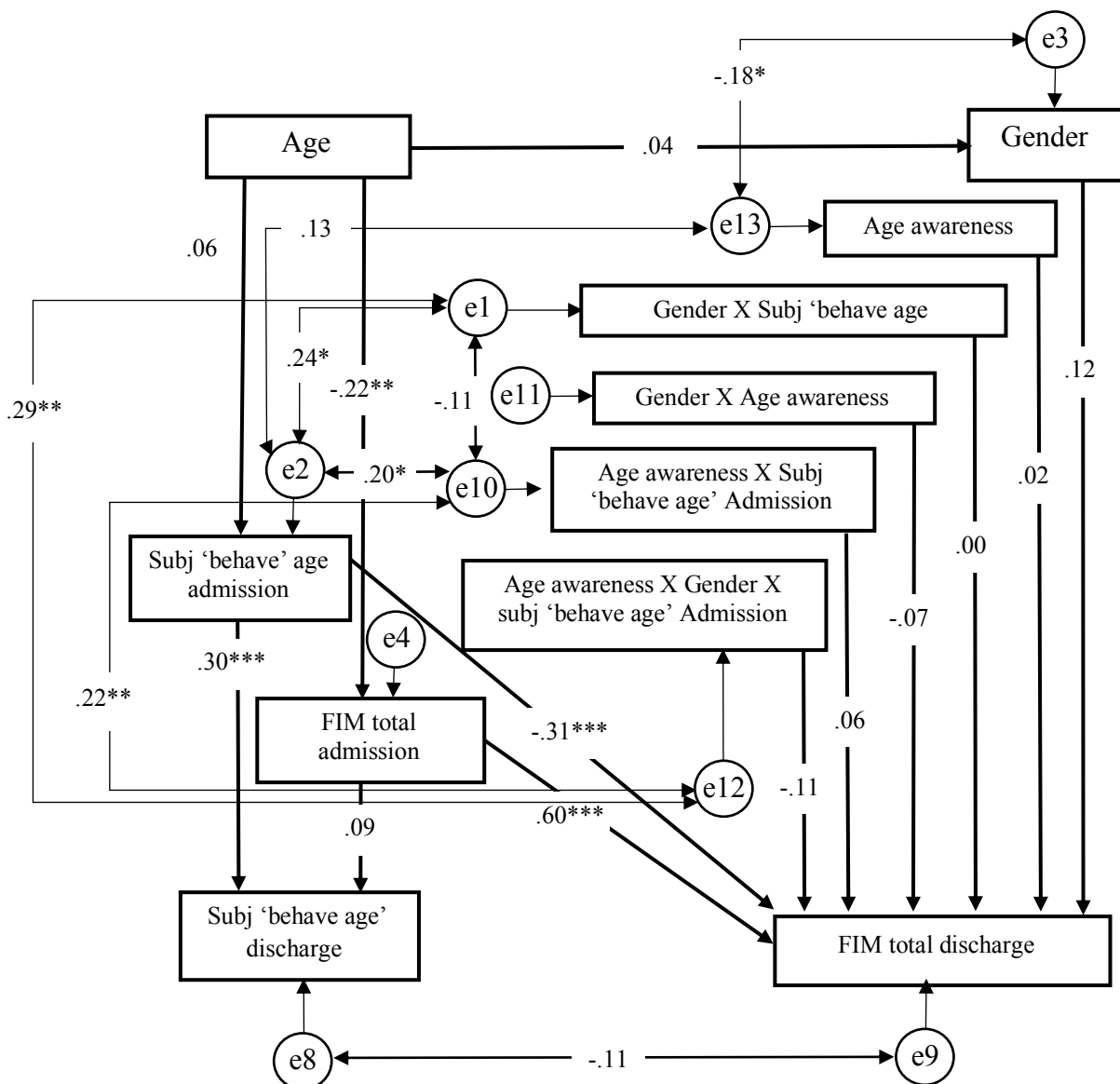
Note: To avoid clutter, most non-significant correlations between unobserved exogenous
variables are not shown.

* p < .05, ** p < .01, *** p < .001

Table 12. Regression Weights for Hypothesis 6b Model

Predictor	Outcome	B	B	SE	P
Age	→ Subjective Behavior age admission	0.00	.06	0.01	.48
Age	→ FIM admission	-0.42	-.22	0.16	.01
Age	→ Gender	0.00	.04	0.01	.60
Subj Behavior age admission	→ Subj Behavior age discharge	0.29	.30	0.08	<.001
FIM admission	→ FIM discharge	0.58	.60	0.06	<.001
Subj Behavior age admission	→ FIM discharge	-5.58	-.31	1.24	<.001
FIM admission	→ Subj Behavior age discharge	0.01	.09	0.00	.26
Gender	→ FIM discharge	3.61	.12	1.94	.06
Gender X Subj Behavior age admission	→ FIM discharge	0.16	.00	2.93	.96
Age Awareness X Subj Behavior age admission	→ FIM discharge	0.68	.06	0.74	.36
Gender X Age Awareness	→ FIM discharge	-1.38	-.07	1.25	.27
Gender X Subj Behavior age admission X Age Awareness	→ FIM discharge	-2.65	-.11	1.75	.13
Age X Age Awareness	→ FIM discharge	0.19	.02	0.59	.75

Summary of results

Table 13 represents the final status of the six study hypotheses.

Table 13. Main results vis-à-vis the research hypotheses.

#	Formulation	Support	Conclusion of finding
	Hypothesis	Results	
1	Reciprocal effects will be found between subjective age and FIM.	*Partial*	Subjective age on admission predicted FIM scores at discharge: those who felt younger on admission had higher FIM scores at discharge. However, FIM scores on admission did not predict subjective age at discharge.
2	Well-being mediates the reciprocal effects between subjective age and FIM.	*Partial*	Wellbeing only mediated the association between subjective age on admission and FIM scores at discharge.
3	Age awareness would moderate the reciprocal effects between subjective age and FIM.	*No*	Both age awareness and the Age awareness X Subjective age on admission interaction were not associated with FIM at discharge.
4	Age awareness moderates the indirect effect between subjective age and FIM as mediated by well-being.	*No*	Age awareness and the Age Awareness X Subjective age on admission interaction were not associated with well-being.
5a	Gender moderates the effects of subjective "look age" and FIM at discharge.	*No*	Gender and the Gender X Subjective look age on admission interaction did not predict FIM at discharge.
5b	Gender moderates the effects of subjective "behave age" and FIM at discharge.	*No*	Gender and the Gender X Subjective behavioral age on admission interaction did not predict FIM at discharge.
6a	The moderation effect of gender for the effects between subjective "look age" and FIM at discharge is stronger among patients with high age awareness.	*Partial*	There was a three-way interaction between gender, age awareness, and subjective look age. Subjective look age had the weakest effect on FIM at discharge among men with low age awareness.
6b	The moderation effect of gender for the effects between subjective "behave age" and FIM at discharge is stronger among patients with high age awareness.	*No*	No two-way or three-way interactions were associated with FIM at discharge.

Additional analyses controlling for additional covariates

In addition to the reported models testing the different hypotheses, all the models were also analyzed with education, socio-economic status, health comorbidities, self-reported health, and the main reasons for hospitalization (i.e., stroke or fracture) as covariates in addition to age and gender. Health was related to subjective age at admission, and age was related to FIM at admission but the rest including health comorbidities were not significant.

After controlling for these additional covariates subjective age on admission predicted FIM at discharge from the rehabilitation facility, it predicted subjective age at discharge, and FIM on admission predicted FIM at discharge. As none of the covariates significantly changed the path models, they were not reported in the main analyses. It should be added that controlling for these additional covariates presented a "statistical overload" vis-à-vis the sample size.

Discussion

In line with the growing evidence that subjective age predicts physical and mental health (e.g., Spuling et al., 2013; Stephan et al., 2015), the present study set out to examine the gender-based perspective on the reciprocal relationships between subjective age and specific clinical outcomes, namely, functional independence scores (measured by the FIM test), among older adults following osteoporotic fractures and stroke.

In the following chapter, I will review and assess the results of this study vis-à-vis the relevant literature and my own interpretations. The study limitations and strengths will be explained, and finally practical implications and recommendations for future research will be suggested.

So far, the literature has rarely examined the reciprocal relationships (or any relationships) between subjective age and clinical outcomes, such as functional independence scores. The current study has taken the relationship between subjective age and health outcomes one step further by creating a model according to which the well-established predictive characteristics of subjective age (e.g., Kwak et al, 2018; Stephan et al., 2014; Takatori et al., 2019; Westerhof et al., 2014) would apply to the prediction of specific clinical outcomes such as, functional independence scores following a rehabilitation process due to osteoporotic fractures or stroke particularly in late life. The study took place in several rehabilitation facilities where older aged participants (65+) underwent rehabilitation treatments following an osteoporotic fracture or stroke. The proposed model postulated that

the relationship between subjective age on admission to the rehabilitation facility and functional independence (measured by FIM scores) at discharge from the facility were reciprocal and bi-directional, namely, that subjective age predicted FIM scores and vice versa, that FIM scores predicted subjective age.

The findings have shown that subjective age at admission to the rehabilitation facility did predict functional independence at discharge. Patients who were admitted with a younger subjective age were discharged with better functioning as seen from their FIM scores. There is a plethora of studies about the predictive characteristic of subjective age, especially the prediction of physical and mental health (e.g., Kotter-Grühn et al., 2016; Montepare, 1998). There are only numerous studies on the relationship between subjective age and clinically measured outcomes, such as that of Boehmer's (2006, 2007) about the relationship between subjective age and the recovery from cancer, of Levy and Myers (2005) on the relationship between respiratory mortality and self- perceptions of aging, the impact of subjective age on health and longevity (Westerhof et al., 2014) and a very recent study on the impact of views of aging on the mortality of old cancer patients (Schroyen et al., 2020). However, there has been, so far, no evidence of the relationship between subjective age and specific clinical outcomes such as functioning measured by FIM scores.

In addition, the model also postulated that this reciprocal effect between subjective age and functional outcomes would be mediated by the well-being of the patient, namely a younger subjective age at the beginning of the rehabilitation process, would be associated with higher well-being in the course of rehabilitation, and, in turn, with better functional independence at discharge. It was thought that patients with better functional independence at the beginning of the rehabilitation process would be associated with higher well-being during rehabilitation, and in turn with younger subjective age at discharge. The study model further postulated that age awareness and gender would moderate the reciprocal effects between subjective age and functional outcomes. The study expected that reciprocal effects would be stronger among those who have a higher age awareness and that, among women, the reciprocal effects would be mainly between subjective age that relates to physical appearance and functional independence and while among men, the reciprocal effects would be mainly between subjective age that relates to behavior and functional independence.
In order to assess the reciprocal effects between subjective age and functional outcomes, I employed a cross-lagged model. The model is based on the heuristic model of Westerhof and Wurm (2015), which describes how subjective aging is related to different psychological

resources, which are in turn, related to health and survival. The current research model has expanded the abovementioned model by relating to the moderating effects of gender and age awareness, and the mediating effect of well-being on the reciprocal relationships between subjective age and functional outcomes. I therefore used this longitudinal model to examine the reciprocal effects between subjective age and functional independence along with the gender perspective on these relationships. In the following chapter I will review and elaborate on the results vis-à-vis the existing literature, and the extent to which they support the six hypotheses.

Hypotheses

<u>Hypothesis 1 - Existence of reciprocal effects of subjective age and functional independence measured on admission and at discharge</u>

The results show a significant effect of subjective age on admission to the rehabilitation facility on functional independence (expressed by FIM scores) at discharge. Specifically, older adults, admitted to a rehabilitation facility after undergoing an operation following an osteoporotic fracture or treatment for stroke, who felt younger than their chronological age was discharged with better functional outcomes. Older adults who felt older than their chronological age were discharged with lower FIM scores, i.e., worse functional outcomes. This novel finding strengthens the predictive characteristic of subjective age. There is ample evidence that subjective age is a predictor of health outcomes (Gabrian & Wahl, 2017; Kotter-Grühn et al., 2016; Montepare, 2009; Spuling et al., 2013; Stephan et al., 2015), yet, this finding indicates that subjective age can predict direct clinical health outcomes.

The inclination to feel younger or older than one's chronological age is a significant phenomenon with consequences for mental and physical outcomes (Marquet et al., 2018; Shinan-Altman & Werner, 2019). Findings from several studies have indicated that an old age identity is coupled with negative concomitants, such as depression and anxiety (Shrira et al., 2014), indicators of biological susceptibility (Lahav et al., 2018; Stephan et al., 2015a, 2015b; Stephan et al., 2019), sleep difficulties (Stephan et al., 2017), and undesired health behaviors such as reduced engagement in preventive health behaviors (Lahav et al., 2018; Wienert et al., 2017). A more positive attitude toward one's aging is correlated with a younger subjective age (Bodner et al., 2017). A younger subjective age implies positive perceptions of a person's own aging, which are related to positive developmental outcomes, while an older subjective age implies negative perceptions of a person's aging, which are

related to negative developmental outcomes (Gabrian, 2016). Older adults who feel younger than their chronological age and have positive aging attitudes, has greater life satisfaction (Teuscher, 2009; Westerhof & Barrett, 2005), and the willpower to cope with difficulties (Boehmer, 2007). Hence, while old age identity is coupled with negative concomitants, a young age identity means that the older persons feel that they have a goal in life, which predicts a better probability of engaging in positive health practices (Lahav et al., 2018; Ryff et al., 2016; Wienert et al., 2017).

The findings of the first part of Hypothesis 1 are consistent with the above Findings, adding yet another layer by maintaining that not only does subjective age predict health outcomes, but it also predicts specific clinical outcomes, such as functional independence scores.

Experiencing an osteoporotic fracture such as a broken hip or a stroke is very traumatic for old persons and is accompanied by a great deal of pain and fear of the future. The disheartening results of osteoporotic fractures and stroke include lower quality of life, higher disability, and even death (Dempster, 2011; Knecht et al., 2011). Older adults feel vulnerable and full of apprehension about what to expect, especially about their functional independence. The acute event and the transition from the hospital to the rehabilitation facility enhance these grim feelings, and the more vulnerable the patients feel, the lower their functional independence (Gill et al., 1999).

Intuitively, one would surmise that high functional independence, and high FIM scores on admission to the rehabilitation facility, would predict a younger subjective age at discharge, and vice versa – low FIM scores at admission would result in an older subjective age at discharge. Yet, this was not the case in the current study. As it turned out, the findings indicated that functional independence, which is also based on physical and mental health, did not predict subjective age. There could be several reasons for that. According to quite a number of studies, people, and especially older adults, take a long time to adjust to their new circumstances, such as their level of functional independence following an osteoporotic fracture or stroke. Most old patients experience a severe deterioration in their health-related quality of life (Alexiou et al., 2018; Amarilla-Donoso et al., 2020). The average length of the rehabilitation period is 30 days, and according to findings from a recent study, a significant loss of functioning is felt even six months after discharge from the rehabilitation facility (Segev-Jacubovski et al., 2019). In addition to the abovementioned after-effects of an osteoporotic fracture, post-stroke patients suffer from fatigue, which is difficult to cope with (Elf et al., 2016), and have a very poor health-related quality of life (Sturm et al., 2004). If,

on admission to a rehabilitation facility, the patients' initial FIM scores are lower, and predictably, as the rehabilitation process progresses, FIM will improve. However, this improvement is not enough to have an effect on the patients' subjective age, that is to say that the patients' functioning scores on admission to the rehabilitation facility are not relevant to the future prediction of subjective age. A younger subjective age is related to older adults' ability to better adapt to old age, and is usually correlated with positive outcomes (Shrira et al., 2014), higher self-esteem (Westerhof et al., 2012), higher motivation and well-being (Armenta et al., 2018; Mock & Eibach, 2011), and therefore, predicts higher FIM scores at discharge from the rehabilitation facility. The study sample consisted of post-stroke patients in diverse functioning states (from complete paralysis and low cognitive abilities to minor physical disabilities) and patients who experienced an osteoporotic fracture (mostly a hip fracture), also in various states of functioning from complete lack of mobility (use of a wheelchair) to the ability to walk unaided. Findings from Rippon' and Steptoe's study (2018) which dealt with functional health expressed in ADL scores (Activities of Daily Living), have indicated that comorbidities and social circumstances confounded the relationship between functional health (ADL scores) on admission to the rehabilitation facility and subjective age at discharge. Similarly, it is possible that due to the participants' comorbidities and social circumstances in the current study, (only 42% were married, 42% reported poor health) FIM scores on admission did not predict subjective age at discharge.

Finally, both auto-regressive, temporal effects described in the first hypothesis were supported. FIM at admission to the rehabilitation facility predicted FIM at discharge. This finding is in line with former studies (e.g., Inouye et al., 2001; Wade et al.,1983), and is an indication of FIM scores' stability. Additionally, subjective age on admission predicted subjective age at discharge. This finding, which is line with former studies (e.g., Kotter-Grühn et al., 2016; Kleinspehn-Ammerlahn et al., 2008; Uotinen et al., 2006), indicates that subjective age is relatively stable over time with minor diurnal fluctuations within a certain range.

Hypothesis 2 - Well-being mediates the reciprocal effects between subjective age and FIM

In the current research well-being was used as a mechanism, which could mediate the reciprocal effects between subjective age and functional independence in the course of the rehabilitation process. According to Westerhof and Wurm's model (2015), subjective age predicts, among other things, well-being. Aging perceptions that include a younger subjective age and positive attitudes towards aging contribute to the development and enhancement of psychological resources, such as a higher sense of self-efficacy and an inner locus of control.

These psychological resources motivate people to adopt a healthy lifestyle and initiate activities that will promote their well-being.

Following the historic 2004 WHO declaration that mental health is not merely the absence of illness but includes positive symptoms of positive functioning (Caprara et al., 2010) we chose to measure well-being as mental health. The mental health questionnaire included nine items based on Lamers et al. (2011). Items number 4-9 of the questionnaire are part of Ryff's (1989) six-factor model of well-being. The first three items (1-3): optimism, self-esteem, and life satisfaction, are not part of Ryff's model and are fair indicators of positive mental functioning (Keyes, 2007) and as such are relevant to the construct of subjective age. Older adults who had a younger subjective age were involved in health, leisure, and life-style activities (Montepare, 2019).

The current study examined the correlations and interactions between all the items of well-being in the study questionnaire with an emphasis on the first three items. Optimism which is "one's tendency to expect positive outcomes" (King & Belkin, 2020, p. 231) mediated the association between subjective age on admission and FIM scores at discharge. Older subjective age is correlated with less optimism and less satisfaction from life. Older adults who felt younger than their chronological age on admission to the rehabilitation facility were more optimistic, and as a result, invested more efforts in their rehabilitation. The result was better functioning at discharge from the rehabilitation facility. This is in line with former findings according to which optimism is a powerful predictor of well-being in older adults (Ferguson & Goodwin, 2010). In the current research optimism mediated the correlation between well-being and subjective age and FIM scores at discharge from the rehabilitation facility. Findings from previous studies on optimism and physical health have only linked optimism to physical health. Findings from a later meta-analytic review that included 83 studies, with 108 effect sizes (ESs) by Rasmussen et al. (2009), have indicated that optimism is a significant predictor of positive health outcomes.

Life-satisfaction is "the degree to which a person positively evaluates the overall quality of his/her life as-a-whole. In other words, how much the person likes the life he/she leads" (Veenhoven, 1996, p. 6). The scores for life-satisfaction, the third item on the short form of the Mental Health Continuum (MHC-SF), (Lamers et al., 2011; Żemojtel-Piotrowska et al., 2017), during the rehabilitation period have also mediated the effect of subjective age at admission on FIM scores at discharge. Being admitted to the rehabilitation facility with a younger subjective age predicted higher life-satisfaction which was subsequently related to

higher FIM scores. This is in line with a study by Diener et al. (2017) according to which in some cases subjective well-being can influence health. This influence can be expressed in health behaviors and in the immune and the cardiovascular system. Life satisfaction, which is part of subjective well-being, can also influence the healing process of patients who have undergone surgery; to put it in another way, those who were high in life satisfaction healed more quickly (Kopp et al., 2003).

Self- esteem is a single item measure included in the Single-Item Self-Esteem Scale (SISE) (Robins et al., 2001). It did not mediate the effect of subjective age on admission to the rehabilitation facility on FIM scores at discharge. It is a complex construct and was described in an early study as having "two interrelated aspects: it entails a sense of personal efficacy and a sense of personal worth. It is the integrated sum of self-confidence and self-respect. It is the conviction that one is competent and worthy of living" (Branden, 1969 p. 110). Findings from later studies have indicated that besides the level of self-esteem, additional multiple components that should be taken into account such as, stability of self-esteem, implicit self-esteem, and the extent to which self-esteem is unforeseen and accidental (Crocker et al., 2003, 2005; Kernis & Goldman, 2006). This complex structure of self-esteem might have implications when used as a mediator, in this case the mediator of the effect of subjective age on FIM scores. Self-esteem becomes unstable when people have to cope with life events (Kernis &Wachull, 1995). Illness, or a traumatic event such as, an osteoporotic fracture or stroke is a serious event and might disrupt the stability of the older adult's self-esteem. The question pertaining to self-esteem in the study questionnaire only related to the level of the participant's self-esteem.

All in all, mental health mediated the effect of subjective age at admission on FIM score at discharge. In other words, subjective age at admission predicted well-being during rehabilitation, and well-being predicted higher FIM scores at discharge. More specifically, those who felt older on admission had lower well-being scores during rehabilitation, and those with lower well-being had lower FIM scores at discharge.

Although wellbeing predicted subjective age at discharge, this study did not find evidence for the posited mediating role of well-being in the association between FIM scores at admission and subjective age at discharge. This could derive from the same reason that functional independence (expressed in FIM scores) did not predict subjective age at discharge from the rehabilitation facility (see Hypothesis 1).

Hypothesis 3 - Age awareness moderates the reciprocal effects of subjective age and FIM

Age awareness is defined as "the extent to which adults attend to or possess an awareness of their age" (Montepare, 1996, p. 195). In layman's language this means blaming old age for various phenomena such as having difficulties in climbing stairs rather than relating these difficulties to a sedentary lifestyle. According to findings from a recent study (Bergman & Bodner, 2019), older adults with enhanced age awareness may find it difficult to feel younger than their chronological age, namely having a younger subjective age. In line with these findings, the current study found a weak significant positive correlation between age awareness and subjective age at admission, meaning that higher age awareness was related to feeling older on admission. Age awareness did not moderate the effects of subjective age on admission on FIM scores at discharge. It would be reasonable to assume that an older adult who had undergone an operation due to an osteoporotic fracture or a treatment for stroke, and had been later transferred to a rehabilitation facility, would have (if assessed) a higher age awareness. High age awareness can thwart older adults' motivation to take part in intervention and rehabilitation efforts that might lead, among other things, to better functionality (Diehl et al., 2014). Compared to age awareness, subjective age is strongly correlated with positive developmental outcomes and successful aging (Turner et al., 2020), and with indicators of health and well-being especially in the second part of life (Levy et al., 2002; Westerhof et al., 2014).

Hypothesis 4 - Age awareness moderates the indirect effect between subjective age and FIM as mediated by well-being

Our findings have indicated that age awareness did not moderate the indirect effect of wellbeing in the link between subjective age on admission and FIM at discharge. This means that an older adult admitted to a rehabilitation facility with a younger subjective age will have higher well-being scores, and this will contribute to a better rehabilitation unrelated to the older adult's age awareness. This study did not find evidence for the posited mediating role of well-being in the association between FIM scores on admission and subjective age at discharge. Furthermore, the relationship between subjective age and FIM was not reciprocal, namely, FIM at admission did not predict subjective age at discharge; therefore, it could be deduced that age awareness did not moderate the indirect effect of wellbeing in the link between subjective age on admission and FIM at discharge. This is yet again, an indication of the strength of subjective age as a predictor of functioning at old age and shows that it does not depend on age awareness (at least not in the current context). In hypothesis 6 discussed below, age awareness was shown to matter as a viable moderator in the model.

<u>Hypothesis 5- Gender moderates the reciprocal effects of subjective "look age" (H5a) and</u>
<u>subjective "behave age" (H5b), and functional independence during the rehabilitation process</u>
"Behave age" (or "do age") and "Look age" (Kastenbaum et al., 1972) are two of the four
subjective age dimensions (the other two are "physical age" and "mental age" – Uotinen et
al., 2005) examined in the current research. These two dimensions of subjective age, "look
age" and "behave age", apply to studies (Franzoi, 1995; Franzoi et al., 2012) showing that
men and women have different body orientations, which are affected by their masculine or
feminine traits, and by whether their perceptions are of the body-as-object, the
"look age", or the body-as-process, the "behave age".

In line with Hypothesis 1, a younger subjective "look age" on admission predicted a
younger subjective "look age" at discharge and higher FIM scores at discharge; and higher
FIM scores on admission predicted higher FIM scores at discharge. In addition, the
confirmed one-way reciprocal relationship between subjective age on admission and FIM
scores at discharge was evident in a weak negative correlation between subjective "look age"
and FIM at discharge; meaning that those who felt that they looked older at the beginning of
the rehabilitation had lower FIM scores at discharge. Similarly, subjective "behave age" on
admission predicted FIM scores at discharge. Those who felt that they behaved older than
their chronological age at the beginning of the rehabilitation had lower FIM scores at
discharge. Moreover, a younger subjective "behave age" on admission predicted younger
subjective "behave age" at discharge. These findings show that the two dimensions of
subjective age behave in the same way as the general construct itself, granting it yet further
testament to its strength.

However, the Gender X Subjective "look age" at admission and the Gender X
subjective "behave age" on admission interactions did not predict FIM scores at discharge.
"Look age" relates to physical appearance and may be more relevant to women who
traditionally view themselves as objects (Franzoi, 1995; Lipowska et al., 2016).

These results might also stem from the change over time in the way older men and
older women view their body. According to studies from 5-10 years ago, older women
viewed their body differently from older men especially when faced with age related medical
conditions such as, loss of bodily autonomy which is one of the possible results of a stroke or
an osteoporotic fracture. According to those studies, older men's reaction to their loss of
autonomy was more negative than those of women. The authors Clarke and Griffin (2008)
and Hilário (2015) concluded that the loss of bodily autonomy was gendered because old
men and old women reacted in different ways to this loss. Women were more concerned with

the effect of the loss of bodily autonomy on their family, while old men were more concerned with the loss of strength and the fact that their loss of bodily autonomy belied masculine norms. Old men's perceptions of their bodies affect the way they cope with age related body changes and, like women, they engage in healthy eating habits, weight monitoring and a healthy lifestyle (Bennet et al., 2020).

In comparison, older adults of today aged 60 and above, are highly active and engage in leisure time, physical, and health, activities, and keep a healthy lifestyle. These activities have been considered in current psychological research as fundamental components of successful aging (Baltes & Baltes, 1990), and indeed, findings from a mixed method study (Berlin et al., 2018) on a sample of 256 women, 60-92 years of age, all of which suffered from at least one chronic disease, have indicated that involvement in leisure and physical activities, and self-rated health status predicted successful aging.

With their growing population in our neoliberal consumerist society, older adults, and especially older women, (due to their increased life expectancy) have become desired customers to businesses and corporations who cater to their new needs which enables them to lead this "younger" lifestyle. It appears therefore, that old women have reaped the benefits of the accomplishments of the feminist movement that allowed them to spend their second half of life in a more egalitarian and liberal society. As a result, a shift has occurred in the way older women perceive their age as shown in a recent study, where older women claimed that their chronological age does not reflect the way they feel about their age (Muhlbauer et al., 2018).

As mentioned before, a youthful subjective age is an indication that the person is aging well (Montepare, 2009). Aging well implies successful aging which according to Pruchno and colleagues (2010) is a complex concept that consists among other things of different domains of positive mental as well as physical functioning. In spite of the fact that only a few studies have indicated that there is a correlation between younger subjective age perception and high levels of successful aging (Uotinen et al., 2003), findings from a recent study have shown that older adults' younger subjective age and higher levels of successful aging will not decline even if they have to cope with high levels of PTSD symptoms. They will still maintain higher levels of successful aging (Palgi et al., 2019).

Based on these last findings, maybe, coping with a traumatic event such as stroke or an osteoporotic fracture at old age could lead to the same results. Since according to the findings of Muhlbauer et al. (2018), there have been changes in the way older women perceive themselves in the 21st century, age has become less a prism through which they view life and

interpret, we could not find disparities between them and the men.

The lack of two-way interactions between gender and subjective 'look age' and subjective 'behave age' was further investigated in the hypothesis 6 where age-awareness was factored in and tested in three-way interactions as discussed in the following section.

<u>Hypothesis 6- The moderating force of gender on the effects between subjective "behave age" and subjective "look age" and FIM at discharge is stronger among patients with high age awareness</u>

"The awareness of having grown older is a major subjective experience during the adult years" (Diehl & Wahl, 2010, p. 340). One of these subjective experiences is physical decline (Steverink et al., 2001), which also means a decline in personal appearance. Older women, like younger women and even girls, consider their personal appearance a significant part of their identity in contrast to men, and this is directly related to the women's levels of self-esteem (Franzoi et al., 2012; Lipowski et al., 2016).

In the second half of the 20th century age, awareness of age has become quite an issue among older adults and particularly among older women (Montepare, 1996). Montepare (1996) described older women as bearing the heaviest brunt of this characterization, as studies have shown that they consider themselves less youthful than men, especially if they are close to a proximal event such as their birthday.

Following a significant three-way interaction between gender, age awareness and "look age", the analysis focused on the effect of subjective "look age" on FIM in each of the four groups of men and women with low and with high age awareness. As the groups were small, especially the men's group, one should consider the strength of the correlation and attribute less importance to the significance level which   is highly affected by the size of the group.

The interaction showed that among participants with lower age awareness, the effect of subjective "look age" on FIM scores (functional independence), was stronger among women. That is, the weak relationship between subjective "look age" and functional independence was stronger among women compared to men. However, among participants who had higher age awareness, that is they were more cognizant of their age, there were no gender differences in the relationship between subjective "look age" and functional independence. This finding was contrary to the prediction in the hypothesis, which stipulated that a stronger relationship between subjective "look age" and FIM scores would occur among women with high age-awareness. However, when considering the effects of old age as outlined in (de)gendering theory (Silver, 2003), together with the differential body perception of men and women, these findings can make sense as discussed below.

Women's preoccupation with their appearance remains the same whether they have higher or lower age awareness. Men with lower age awareness are less preoccupied with their appearance. Similar to women, men with higher age awareness are more preoccupied with their appearance. According to de-gendering theory suggested by Silver (2003), during old age, gendered identities and explicit gender reorientations are reduced. Findings from recent studies have indicated that the gap between body perceptions of old men and women has narrowed. It is possible that gender-related views on the body have become less dichotomous than we previously thought, especially among older adults who are coping with acute medical conditions. Men with higher age awareness are more aware of the de-gendering processes they undergo. Those men become more attached to their inner feminine self, and as a result their appearance matters to them. When men's age awareness is low, they are less aware of their de-gendering processes and are not attached to their inner feminine self and as a result their appearance does not affect their FIM scores.

This visual feedback is then processed subjectively to create a perception of what could be regarded as a "non-weighted" subjective "look age". "Non-weighted" in this case means that a more objective perception of the aging process is not acknowledged in people with lower age awareness, and the way they look is interpreted as a point measure of health and lifestyle with no attenuation or factoring of the objective reality of the decaying body. This could explain the stronger correlation found in older women who were less aware of their age between subjective "look age" and FIM scores.

Accordingly, when older men and women are more age-aware, the de-gendering process makes itself evident and the saliency of physical appearance is negated in women and equated with the men's saliency of physical appearance. This probably led to both older men and older women showing similar and very weak relationships between subjective "look age" and FIM scores. This could probably be because they consider their physical age as a product of the natural decay of aging rather than their health and functioning.

In contrast to the significant three-way age-awareness X gender X subjective "look age" interaction, the three-way age-awareness X gender X subjective "behave age" interaction was not significant. This means that regardless of the level of awareness to one's age, men and women do not differ in the relationship between their subjective "behave age" and FIM scores.

Presumably, lower age awareness prevented older women from attributing their subjective "look age" to their health and lifestyle and not to their old age while this process did not seem to occur in men with regards to subjective "behave age".

However, this discrepancy and non-symmetry in the effects of age awareness on the relationship between gender and subjective "behave age" on FIM scores, can be explained as the more realistic approach attributed to men regarding their perception of their body as process. This perception of body as a process could be regarded as more strongly related to actual functioning, by way of its definition. Functioning could be seen as a direct expression of the different processes their bodies are undergoing. This allows for a degree of independence from having to be aware of one's age when estimating subjective levels of actual physical vitality as measured by subjective "behave age" as opposed to estimating subjective physical appearance as measured by subjective "look age".

Subjective "behave age" appears therefore to be a more independent and possibly a stronger indicator on functioning compared to subjective "look age". Since women are more oriented towards emphasizing the saliency of physical appearance (body as an object), and men are more oriented towards emphasizing the saliency of physical functioning (body as a process). Men's orientation therefore seems more attuned to the inevitability of the deterioration of physical abilities and functioning as age progresses. These findings support the current literature that of identified heightened fear of aging in women compared to men (Clarke, 2002), more resources allocated to maintain a younger and more vital physical appearance (Clarke, 2018; Gosselink et al., 2008), and present themselves as younger reflecting a will to remain young (Barak & Stern, 1985).

This may lead to a possible conclusion that the de-gendering process is more relevant to older women rather than older men, since only when women attain higher age awareness, they would more readily attribute their appearance at old age, rather than to the way they actually function in daily life.

It remains therefore, for the women to narrow the age awareness gap, for an effective calibration of one's expectations regarding their appearance and behavior, to achieve a more fulfilling and satisfying period in life.

Strengths and limitations

The current study has several strengths. It is one of the first to employ a cross-lagged model in order to examine the reciprocal relationship between subjective age and specific clinical outcomes, in this case, functional independence measured by FIM scores. To the best of our knowledge, it is the first study to demonstrate that subjective age predicts specific clinical outcomes measured by FIM scores. At the same time, the cross-lagged model showed that subjective age at the beginning of a clinical treatment, rehabilitation in this case, following stroke or a hip fracture (total joint arthroplasty), predicted subjective age upon completion of

this treatment was terminated. It also showed that the FIM scores at the beginning of the rehabilitation process predicted FIM scores at the termination of this process contrary to findings from an earlier study (Caracciolo & Giaquinto, 2005).

The abovementioned results were obtained from a sizeable sample of older adults hospitalized in three different rehabilitation facilities in the northern, central, and southern regions of Israel. The people in the sample underwent a number of measurements, the first one on admission to the rehabilitation ward, then several measurements during the patients' hospitalization by the use of diaries, and at discharge from the rehabilitation facility.

Although no significant correlations were found between gender and subjective age (subjective "look age" or "behave age"), this study examined, for the first time – as far as were able to determine – moderating effect of gender on the relationship between subjective "look age" and "behave age" and functional independence.

In spite of the fact that one of the inclusion criteria of this study stipulated no major cognitive impairment on admission (score >24 on the MMSE, Folstein et al., 1975), the participants were unable to independently complete the questionnaires. Instead, they were interviewed by research assistants who read out the questions to them individually (the average length of such interview was 75 min.). In line with De Vries et al. (2014), administering questionnaires in a collaborative approach allows informal interaction between the interviewer and the respondent, and could therefore result in responses that actually reflect more effectively the current situation of the respondent.

The study also had several limitations. In the current longitudinal study, we measured subjective age on admission, and at discharge, and in between, and measured FIM scores on admission and at discharge. We also checked trajectory effects from subjective age on FIM and vice versa. However, the use of longitudinal design and the cross-lagged model did not allow us to determine with certainty causality in the relationship between subjective age and FIM, with certainty although it had an advantage over a cross-sectional design (Shahar, 2009). In other words, a younger subjective age on admission predicted better functioning outcomes at discharge, but this may not be the cause of functional change. Further research might look into additional mechanisms that could mediate the relationship between subjective age and functional independence. One possibility is to differentiate between different questionnaires of well-being such as, the WHO-Five well-being scale (Bech et al., 2003) or the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) (Tennant et al., 2007), and to look into a third variable that was not measured in the current study such as, personality.

One other limitation was the use of a 4-item questionnaire (Montepare & Clements, 2001) to measure the moderating effect of age awareness on the relationship between subjective age and functional independence. Further research might use a more comprehensive questionnaire that includes questions about the awareness of age-related losses and gains and their cognitive and social significance (Brothers et al., 2019; Kaspar et al., 2019).

The purpose of any study questionnaire is to collect data that represents as accurately as possible, the respondents' feelings, experiences, attitudes and personal details. In some cases, the respondent answers were affected by social desirability, which was defined by Grimm (2010) as "the tendency of research subjects to give socially desirable responses instead of choosing responses that are reflective of their true feelings" (p. 2). A questionnaire dealing with health issues (such as the current study) might trigger socially desirable responses especially in face-to face interviews (Latkin et al., 2017; Stodel, 2015), which might be another limitation of the current study. Further studies might use tactics to reduce socially desirability such as Stodel's (2015) use of cognitive loading or wording, and prefacing the questions (Latkin et al., 2017).

Finally, further efforts should be invested in the inclusion of weakened and disadvantaged populations, which would require translating the questionnaires into Arabic, Russian, and Amharic.

Practical implications and recommendations for future research

This research has added yet another layer to the global trend of personalized medicine. The findings should urge clinicians to apply subjective age measures when they design rehabilitation protocols for a particular patient. This might help with the rehabilitation process because a younger subjective age is a potential resilience factor that motivates older individuals when coping with the challenges old age presents, such as, the painful rehabilitation process (Weiss & Kornadt, 2018). Moreover, designing different treatment protocols according to the patient's subjective age might affect the length of the patient's stay in the rehabilitation facility, which in the long run, could mitigate costs for the national health system.

Identifying the patient's subjective age is relatively simple. All the clinician has to do is ask:" How old do you feel you are?" (Kastenbaum et al., 1972). Further research could assist in designing interventions geared to induce a younger subjective age (e.g., Brothers & Diehl, 2017) so that the patient would be able to cope with the rehabilitation process more successfully. Inducing youthful identities and more positive aging self-perceptions might

become part of health authorities' strategies (Westerhof et al., 2014). The 8 - week Aging[Plus] program (Brothers & Diehl, 2017) has motivated younger and older adults to get involved in physical activity, which is known to promote healthy and successful aging (Nielsen & Reiss, 2012).

The interplay between subjective age and functional independence calls for comprehensive longitudinal studies of the different facets of subjective aging such as ageism and self-perceptions of aging. These studies should cover a number of constructs and not just one. In addition, as most of the participants were released to their homes (86.6%), reaching out and measuring the reciprocal effects between subjective age and functional outcomes several months after discharge from the rehabilitation facility would add further information about these reciprocal relationships. According to a recent study (Segev-Jacubovski et al., 2019), there was significant loss of functioning and participation among post-hip fracture older adults 6 months after discharge from the rehabilitation facility as a result of deterioration in health-related quality of life. Inducing a younger subjective age right from the beginning of the rehabilitation treatment might prevent such deterioration in the patients' quality of life.

Finally, stroke and hip fracture patients are distinct phenomena with probably different trajectories of recovery. We analyzed Model 1 relating to the stroke patients separately from the fracture patients. However, since the sample of the stroke patient was small, it was not possible to do so with complex models. Further research into the interplay between subjective age and functional independence should be should be carried out separately for larger sample for each group.

Summary

In order to grasp the interplay between the measures of subjective age and functional independence, the current study employed a cross-lagged model based on a heuristic model by Westerhof and Wurm (2015), but broadened this model by relating to moderating effects of gender and age awareness.

The findings indicate that subjective age predicts itself in due course, and that FIM predicts itself in due course, meaning that these variables demonstrate a certain stability over time. In addition, subjective age predicts FIM but not vice versa. This might be a further validation of the theory according to which perceptions of aging are a self-fulfilling prophecy. W.I. Thomas was quoted to say:" If men define situations as real, they are real in

their consequences" (Merton, 1948, p. 193). If you perceive yourself as an old person, you will actually become the negative prototype of an old person and function accordingly. The opposite direction, in which a person who is not healthy will develop negative old age perceptions, is less supported by the current study.

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Appendices

Appendix A - Approval forms of ethical review boards (Helsinki Board) of Shoham Geriatric Center in Pardess-Hanna, Fliman Geriatric Center in Haifa, and the Soroka Medical Center in Beer-Sheva.

<u>Shoham Geriatric Center</u>

<div dir="rtl">

המרכז
הרפואי
שהם
לשיקום וחזרה לתפקוד

שם הנהלי נהלים לניסויים רפואיים בבני אדם   תאריך: מאי 2014

טופס 17

אישור מנהל המוסד לביצוע מחקר בנתונים קיימים ושאלונים

תנאי האישור

(1) המחקר יבוצע לפי העקרונות של הצהרת הלסינקי ועל-פי דרישות הנוהל של ניסויים רפואיים בבני אדם בישראל (2014) ודרישות הנהלים הבין-לאומיים העדכניים.

(2) המחקר יבוצע רק לאחר מתן הסבר למשתתף או לנציגו החוקי והחתמתו על טופס ההסכמה מדעת שצורף לבקשה (במקרים המתאימים).

(3) כל שינוי, תוספת או חריגה מתוכנית המחקר, טעון אישור בכתב של תת-ועדת הלסינקי של המוסד הרפואי.

(4) על החוקר הראשי במחקר לדווח לתת-ועדת הלסינקי על הפסקת המחקר.

(5) הארכת תוקף הניסוי הרפואי: **שלושה חודשים בטרם חלוף התקופה המאושרת לניסוי הרפואי**, חובה על החוקר הראשי להעביר דו"ח התקדמות על מהלך המחקר לתת-ועדת הלסינקי של המוסד הרפואי. הוועדה תודיע על החלטתה לגבי המשך המחקר למנהל המוסד הרפואי. המנהל ינפיק אישור חדש למחקר.

(6) בתום הניסוי הרפואי יגיש החוקר הראשי, לוועדת הלסינקי דו"ח מסכם על מהלך הניסוי ותוצאותיו.

(7) האישור ניתן לחוקר הראשי ולמוסד הרפואי המצוינים לעיל ואינו ניתן להעברה לאחר.

(8) אין לפרסם כל מידע אודות הניסוי הרפואי באמצעי התקשורת ההמוניים, כגון עיתונות, רדיו, טלוויזיה, אינטרנט, למעט פרסום בעיתונות מדעית או בכנסים מדעיים, ולמעט פרסום לצורך גיוס המשתתפים בניסוי.

(9) שמירת מסמכים: יש לשמור את כל מסמכי הבקשה, האישורים וכל המסמכים הנאספים במהלך הניסוי הרפואי **לפחות 7 שנים מתום מחקר.**

(10) הגבלות נוספות:

(11) תוקף האישור: 14/7/16

בהצלחה !

בכבוד רב,

דר' בוגוסלבסקי
מנהלת המרכז הרפואי שהם

העתק: יו"ר ועדת הלסינקי
יזם הניסוי / נציגו בארץ (באמצעות החוקר)
המחלקה לניסויים קליניים, אגף הרוקחות-משרד הבריאות

עמוד 2 מתוך 2

</div>

| טופס 17 |
| אישור מנהל המוסד לביצוע מחקר בנתונים קיימים ושאלונים |

כח' תמוז תשע"ה

15/7/15

לכבוד

ד"ר הימן, החוקרת הראשית

ד"ר נכבד/ה,

הנדון: <u>אישור לביצוע מחקר בנתונים קיימים ושאלונים</u>

בהתאם לבקשתך מיום: 30/4/15 ניתן בזה אישור לביצוע המחקר לפי מסמכי הבקשה

פרטי הניסוי

| מספר בקשה בוועדה מוסדית: 4.15 |
| נושא הניסוי (בעברית): |
| התרומה של הרצון לחיות ותפיסות סובייקטיביות של גיל ומרחק מהמוות לשיקומם של חולים לאחר שבץ או שבר |
| שם היזם: דר' הימן |
| ניסוי רב-מרכזי בארץ: ☐ כן   ☒ לא |

מסמכי הניסוי

| פרוטוקול הניסוי- שם/מספר: 4.15 | גרסה:03 | תאריך: |
| טופס הסכמה- שם/מספר: | גרסה: | תאריך: |

בתוקף ההסמכה שקיבלתי מהמנהל הכללי של משרד הבריאות, לתת אישור כ"מנהל" לעריכת מחקר בנתונים קיימים ושאלונים, במוסד הרפואי, לאחר שהבקשה אושרה על-ידי תת-ועדת הלסינקי המוסדית בתאריך:14/7/15, ולאחר ששוכנעתי כי המחקר הנו בהתאם לעקרונות של הצהרת הלסינקי ונוהל ניסויים רפואיים בבני אדם, הנני מאשר את ביצוע הניסוי בכפוף לתנאים הבאים:

עמוד 1 מתוך 2

100

2016

טופס 6

אישור ועדת הלסינקי לביצוע ניסוי רפואי

הניסוי הרפואי הנו

☒ ניסוי רפואי מיוחד, שבסמכות מנהל המוסד הרפואי לאשרו ללא אישור נוסף של משרד הבריאות.

בהתאם לסעיף 4 לנוהל ניסויים רפואיים בבני-אדם.

☐ ניסוי רפואי שאינו מיוחד, ולכן נדרש גם לאישור נוסף של משרד הבריאות.

תנאים והגבלות:

תאריך האישור	תאריך הדיון	חתימה	שם יו"ר ועדת הלסינקי
12.3.17	12.3.17		ד"ר רן מיכלק

הערה: אישור זה מהווה תנאי לרישום באתר ה-NIH. החוקר יעביר את מס' הרישום לוועדת הלסינקי.

העתק: ד"ר גדי מנדלסון – מ"מ מנהל בי"ח גריאטרי, ע"ש פלימן חיפה

המחלקה לניסויים קליניים, אגף הרוקחות- משרד הבריאות

עמוד 2 מתוך 2

101

טופס 6

אישור ועדת הלסינקי לביצוע ניסוי רפואי

תאריך: 12 מרץ 2017

לכבוד
ד"ר אינה שוגייב -החוקרת הראשית
<u>מנהלת מחלקה – ביה"ח פלימן, כאן</u>

הנדון: <u>אישור ועדת הלסינקי</u>

שוכנענו שהניסוי הרפואי, אשר פרטיו מופיעים להלן, אינו נוגד את עקרונות הצהרת הלסינקי, תקנות בריאות העם (ניסויים רפואיים בבני-אדם) תשמ"א-1980 ונוהל לניסויים רפואיים בבני-אדם (נוהל 14, 2016).
אישור זה הנו שלב ביניים בהליך אישור הניסוי הרפואי. החוקר יוכל להתחיל בביצוע הניסוי רק לאחר קבלת אישור המנהל (טופס 7).

פרטי הניסוי

מספר בקשה בוועדה מוסדית: 920170002	סוג הניסוי: מחקר בנתונים קיימים ושאלונים
נושא הניסוי (בעברית): גיל סובייקטיבי ומרחק סובייקטיבי מהמוות: התועלת שלהם בניבוי השיקום לאחר שבץ ושברים אוסטיאופורוטיים	
שם מוצר המחקר:	שם היזם: פרופסור אהוד בודנר – החוג המשולב למדעי החברה, אוניברסיטת בר-אילן
ניסוי רב-מרכזי בארץ: ☒כן ☐לא	

מסמכי הניסוי

פרוטוקול הניסוי – מספר: 920170002	גרסה: 1	תאריך: 19.2.2017
טופס הסכמה מדעת – 2ו	גרסה: 1	תאריך: 19.2.2017
חוברת לחוקר- שם/מספר:	גרסה:	תאריך:
שאלוני מחקר : שאלון הפתיחה, שאלון יומנים, שאלון הסיום	גרסה:	תאריך:
טופס 11- גרסה:		תאריך:

עמוד 1 מתוך 2

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המרכז הגריאטרי – שיקומי פלימן

הפקולטה לרפואה, הטכניון היפה, מדינת ישראל, חיפה, הר ראשי

2016

שם המנהל: מנהל לניסויים רפואיים בבני-אדם

טופס 7

אישור מנהל המוסד הרפואי לביצוע ניסוי רפואי

9) אין לפרסם כל מידע אודות הניסוי הרפואי באמצעי התקשורת ההמוניים, כגון עיתונות, רדיו, טלוויזיה,
אינטרנט, למעט פרסום בעיתונות מדעית או בכנסים מדעיים, ולמעט פרסום לצורך גיוס המשתתפים בניסוי.

10) אספקת מוצר המחקר (Investigational Product – IP) או האמ"ר למוסד הרפואי בו נערך הניסוי הרפואי
היא באחריות יזם הניסוי. אחסונו וניפוקו של מוצר המחקר למטופלים הם באחריות החוקר הראשי. במקרים
של תכשירים רפואיים, פעולות אלו יבוצעו באמצעות בית המרקחת המוסדי, אלא אם כן ועדת הלסינקי
החליטה אחרת.

11) שמירת מסמכים: יש לשמור את כל מסמכי הבקשה, האישורים וכל המסמכים הנאספים במהלך הניסוי הרפואי
לפחות 15 שנים מתום הניסוי.

12) הגבלות נוספות:

13) תוקף האישור: <u>עד 30 בספטמבר 2018.</u>

ב ה צ ל ח ה !

בכבוד רב,

ד"ר גדי מנדלסון
מ"מ מנהל ביה"ח

העתק: יו"ר ועדת הלסינקי – ד"ר רן מיכלק
מנהל בית המרקחת – ד"ר סוידאן חנא (ג'וני)
יזם הניסוי / נציגו בארץ (באמצעות החוקר)
המחלקה לניסויים קליניים, אגף הרוקחות-משרד הבריאות

עמוד 3 מתוך 3

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Soroka Medical Center

שלום רב,

אנו שמחים להודיעך כי מחקר שמספרו: **SOR-17-0330**

בנושא :גיל סוביקטיבי ומרחק סוביקטיבי מהמות : התועלת שלהם בניבוי השיקום לאחר שבץ ושברים אוסטיאופורוטיים

לפי פרוטוקול הניסוי שצורף לבקשה למחקר, ביצוע הניסוי הרפואי אושר ע"י המנהל לתקופה של שנה עד לתאריך: **11/12/2018**

<u>על פי נהל משה"ב, 3 חודשים בטרם חלוף התקופה המאושרת למחקר,</u> חלה עליך חובה להעביר דו"ח התקדמות על מהלך הניסוי לוועדת הלסינקי של המוסד הרפואי ולבקש הארכת הבקשה או להודיע על סיום המחקר.

כל האישורים החתומים ע"י הוועדה, לרבות אישור מנהל (טופס 17) , נסרקים ונשמרים בתוך תיקיית מסמכי המחקר בתוכנת "מטרות"

אנא הדפס אישור זה ושמור בתיק במחקר.

בברכה

גב' אילנה זהבי

רכז/ת ועדה

המרכז הרפואי "סורוקה"

נספח ב' – שאלונים- שאלון פתיחה, שאלון יומנים, שאלון סיום.

Appendix B - Study Questionnaires, opening questionnaire, diaries, completion questionnaire

Age Perceptions and Health Study – Opening Questionnaire
מחקר תפיסות גיל ובריאות – שאלון פתיחה

מספר נבדק: _____ **4 ספרות אחרונות (ללא ביקורת) של ת.ז.:** _____

מספר מראיין: _____ **תאריך:** _____

א. **מין**: 1. זכר   2. נקבה

ב. **שנת לידה**: _____ ג. **ארץ לידה:** _____

ד. **במידה ועלית לישראל, באיזו שנה עלית?** _____

ה. **לאום:** 1. ישראלי   2. אחר: _____

ו. **שייכות דתית:** 1. יהודי/ה   2. דרוזי/ת   3. מוסלמי/ת   4. נוצרי/ה   5. אחר

ז. **מהו מצבך המשפחתי?** 1. רווק/ה   2. נשוי/נשואה   3. גרוש/ה   4. אלמן/ה   5. גר עם בן/בת זוג

ח. **כמה ילדים יש לך (חיים)?** _____

ט-1. **האם את/ה עובד/ת כיום (כשכיר/ה או כעצמאי/ת)?**   כן / לא

ט-2. **מהו סוג ההשכלה שלך? (בחר באפשרות המתאימה):**

0	1	2	3	4	5
ללא השכלה פורמלית	יסודית	תיכונית חלקית	תיכונית מלאה	על תיכונית	אקדמית

י. **כיצד היית מתאר/ת את מצבך הכלכלי?**
1) לא טוב בכלל   2) לא כל כך טוב   3) בינוני   4) טוב   5) טוב מאוד

יא. **כיצד היית מתאר/ת את בריאותך?**
1) לא טובה בכלל   2) לא כל כך טובה   3) בינונית   4) טובה   5) טובה מאוד

יב. **כיצד היית מגדיר/ה את עצמך מבחינה דתית?**
1) חילוני/ת   2) מסורתי/ת   3) דתי/ת   4) חרדי/ת

יג. **האם את/ה מעשן/ת?**
1. אף פעם לא עישנתי
2. עישנתי בעבר הרחוק אבל אינני מעשן היום
3. עישנתי לא מזמן אבל אינני מעשן היום
4. אני מעשן סיגריות בודדות ולא על בסיס יום-יומי
5. אני מעשן פחות מ-10 סיגריות על בסיס יום-יומי
6. אני מעשן מעל 10 סיגריות על בסיס יום-יומי

יד. **בששת החודשים האחרונים, באיזו תדירות שתית משקאות אלכוהוליים כגון יין, בירה, סיידר, משקאות חריפים או קוקטיילים?**

1. כמעט כל יום
2. חמש או שש פעמים בשבוע
3. שלוש או ארבע פעמים בשבוע
4. פעם או פעמיים בשבוע
5. פעם או פעמיים בחודש
6. פחות מאשר פעם בחודש
7. בכלל לא בששת החודשים האחרונים

טו. בממוצע, באיזו תדירות את/ה אוכל/ת ארוחות של מזון מהיר (fast food)?
1. יותר מפעם בשבוע
2. פעם בשבוע
3. פעם עד שלוש פעמים בחודש
4. פעם בכמה חודשים
5. כמעט שלא, או לעולם לא

טז. באיזו תדירות את/ה עוסק/ת בפעילות גופנית מאומצת, כגון ספורט, עבודות בית קשות או עבודה הכרוכה במאמץ פיזי?
1. כמעט שלא, או לעולם לא
2. פעם בכמה חודשים
3. פעם עד שלוש פעמים בחודש
4. פעם בשבוע
5. יותר מפעם בשבוע
6. כל יום או כמעט כל יום

יז. מה גובך ? _____ ס"מ

יח. מה משקלך ? _____ ק"ג

יט. אנא מלא/י את הפרטים הבאים לגבי בני משפחתך :

	האם הוא/היא בחיים	במידה ובחיים האם בריא?	גיל (במידה ונפטר, אנא ציין/י גיל פטירה)
אבא	לא / כן	לא / כן	
אמא	לא / כן	לא / כן	

כ. לפניך רשימה של תכונות שעשויות לתאר אותך בדרך כלל בתקופה שלפני האשפוז. התייחס לכל משפט ודרג עד כמה אתה מסכים או אינך מסכים אתו, על ידי שימוש בסולם שלהלן :
(Personality questionnaire –Neuroticism & Extraversion, John, O.P. & Srivastava, 1999) :

5	4	3	2	1
מאד מסכים	קצת מסכים	ניטרלי	קצת לא מסכים	מאד לא מסכים

עד כמה אתה:

	1	2	3	4	5
1. אוהב לדבר הרבה	1	2	3	4	5
2. דכאוני, מדוכדך	1	2	3	4	5
3. מאופק	1	2	3	4	5
4. רגוע, מתמודד טוב עם לחץ	1	2	3	4	5
5. מלא אנרגיה	1	2	3	4	5
6. יכול להיות לחוץ	1	2	3	4	5
7. יוצר הרבה התלהבות בקרב אחרים	1	2	3	4	5
8. דואג הרבה	1	2	3	4	5
9. נוטה להיות שקט ורגוע	1	2	3	4	5
10. יציב מבחינה רגשית, לא קל לעצבן	1	2	3	4	5
11. בעל אישיות אסרטיבית	1	2	3	4	5
12. יכול להיות מצוברח	1	2	3	4	5
13. לעיתים ביישן, מופנם	1	2	3	4	5
14. נשאר רגוע במצבים לחוצים	1	2	3	4	5
15. חברותי	1	2	3	4	5
16. נהיה מתוח בקלות	1	2	3	4	5

כא. באיזה גיל לדעתך מתחילה תקופת הזיקנה ?

39	38	37	36	35	34	33	32	31	30
49	48	47	46	45	44	43	42	41	40
59	58	57	56	55	54	53	52	51	50
69	68	67	66	65	64	63	62	61	60
79	78	77	76	75	74	73	72	71	70
89	88	87	86	85	84	83	82	81	80
99	98	97	96	95	94	93	92	91	90
109	108	107	106	105	104	103	102	101	100
119	118	117	116	115	114	113	112	111	110
				125	124	123	122	121	120

כב. המשפטים הבאים משקפים מחשבות שונות על הזקנה. אנא סמן/י עד כמה את/ה מסכים/ה או לא מסכים/ה עם כל אחד מהמשפטים בהתייחס לחייך.
(Successful aging questionnaire, Pruchno, Wilson‑Genderson, Rose & cartwright, 2010).

מסכים לחלוטין	מסכים	מסכים או לא מסכים במידה מסוימת	לא מסכים	לא מסכים לחלוטין	
5	4	3	2	1	1. אוכל לומר כי הגעתי לגילי הנוכחי באופן מוצלח
5	4	3	2	1	2. חיי טובים בימים אלו
5	4	3	2	1	3. אני מזדקן/ת היטב

כג. אנא ציין/י כיצד הרגשת בדרך כלל לפני האשפוז ?
(Subjective age questionnaire adapted from two questionnares: Kastenbaum, Derbin, Sabatini & Arrt, 1972; Uotinen, Suutama, 7 Ruoppila, 2003)

מבוגר/ת מאד מגילי	מבוגר/ת מגילי	בגילי	צעיר/ה מגילי	צעיר/ה מאד מגילי	
5	4	3	2	1	1. מבחינה נפשית
5	4	3	2	1	2. מבחינה פיזית
5	4	3	2	1	3. מבחינת איך שאני נראה/נראית
5	4	3	2	1	4. מבחינת איך שאני עושה דברים

כד. אנשים רבים מרגישים מבוגרים או צעירים מכפי שהם באמת. באיזה גיל הרגשת רוב הזמן בתקופה שלפני האשפוז ? אנא הקף/הקיפי בעיגול את הגיל המשקף בצורה הטובה ביותר את הרגשתך רוב הזמן.

9	8	7	6	5	4	3	2	1	
19	18	17	16	15	14	13	12	11	10
29	28	27	26	25	24	23	22	21	20
39	38	37	36	35	34	33	32	31	30
49	48	47	46	45	44	43	42	41	40
59	58	57	56	55	54	53	52	51	50
69	68	67	66	65	64	63	62	61	60
79	78	77	76	75	74	73	72	71	70
89	88	87	86	85	84	83	82	81	80
99	98	97	96	95	94	93	92	91	90
109	108	107	106	105	104	103	102	101	100
119	118	117	116	115	114	113	112	111	110
				125	124	123	122	121	120

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כה. בהנחה כי הקו הבא מתאר את אורך חייך, סמנ/י x על הקו במקום בו הרגשת שאת/ה נמצא/ת בדרך כלל בתקופה שלפני האשפוז:

לידה _____ סוף החיים

כו. לגבי כל אחת מהשאלות הבאות, בחר/י את התשובה המתאימה לך יותר מכולן, נכון לעכשיו:

מאוד מסכים	מסכים	קצת מסכים וקצת לא מסכים	לא מסכים	מאוד לא מסכים	
5	4	3	2	1	1. אני מפחד/ת מאוד מהמוות
5	4	3	2	1	2. אני חושש/ת לאבד את כבודי בסוף ימי
5	4	3	2	1	3. אני פוחד/ת שהראש שלי יפסיק לתפקד בסוף חיי
5	4	3	2	1	4. המחשבה, שלא אוכל לטפל בעצמי בסוף חיי, מטרידה אותי מאוד
5	4	3	2	1	5. העובדה שאינני יודע/ת מה קורה לאחר המוות מטרידה אותי מאוד
5	4	3	2	1	6. אני פוחד/ת מגסיסה (מיתה) איטית וארוכה
5	4	3	2	1	7. העובדה, שהמוות משמעותו הסוף של כל מה שאני מכיר/ה, מפחידה אותי מאוד
5	4	3	2	1	8. אני חושב/ת הרבה על המוות שלי
5	4	3	2	1	9. ככל שאני מזדקן, אני דואג יותר לגבי הבריאות שלי.
5	4	3	2	1	10. ככל שאני מזדקן, אני דואג יותר בעניינים כספיים.
5	4	3	2	1	11. אני דואג שלא אהיה מסוגל להסתדר בכוחות עצמי כשאהיה זקן.
5	4	3	2	1	12. אני דואג שאנשים יצטרכו לקבל עבורי החלטות כשאהיה זקן

כז. במשפטים שלהלן סמן/י עיגול מסביב למספר במשבצת המצביעה על התשובה המוסכמת עליך ביותר, בהתאם למה שהרגשת <u>מאז תחילת האשפוז</u>. במידה ולא הרגשת כך בזמן זה, אנא שער/י כיצד היית עשוי/ה להרגיש.

נכון כמעט תמיד	נכון לעתים קרובות	נכון לעתים	נכון לעתים נדירות	לא נכון בכלל	
4	3	2	1	0	1. אני יכול להתאים את עצמי לכל שינוי שמתרחש
4	3	2	1	0	2. אני יכול להתמודד עם כל מה שנקרה בדרכי
4	3	2	1	0	3. אני מנסה לראות את הצד ההומוריסטי שבדברים
4	3	2	1	0	4. ההתמודדות עם לחץ מחזקת
4	3	2	1	0	5. אני נוטה להתאושש לאחר מחלה, פציעה או כל קושי אחר
4	3	2	1	0	6. אני מאמין שאני יכול להשיג את מטרותיי
4	3	2	1	0	7. תחת לחץ, אני נשאר ממוקד וחושב בבהירות
4	3	2	1	0	8. אינני מתייאש בקלות מכישלון
4	3	2	1	0	9. אני חושב שאני אדם חזק
4	3	2	1	0	10. אני מסוגל להתמודד עם רגשות לא נעימים

כח. לגבי כל אחת מהשאלות הבאות, בחר/י את התשובה המתאימה לך יותר מכולן:

(Age awareness questionnaire: Montepare & Clenets, 2001)

מסכים במידה רבה מאד	מסכים במידה רבה	מסכים במידה בינונית	קצת מסכים וקצת לא מסכים	לא מסכים במידה בינונית	לא מסכים במידה רבה	לא מסכים במידה רבה מאד	
7	6	5	4	3	2	1	1. כשאני חושב על עצמי, אחד הדברים הראשונים שעולים בראשי הוא הגיל שלי.
7	6	5	4	3	2	1	2. אני חושב שהגיל שלי ממלא תפקיד חשוב ביכולות השכליות שלי.
7	6	5	4	3	2	1	3. אני חושב שהגיל שלי ממלא תפקיד חשוב במצב הגופני שלי.
7	6	5	4	3	2	1	4. אני חושב שהגיל שלי ממלא תפקיד חשוב בפעילויות החברתיות שלי.

כט. באיזו מידה אתה מסכים עם ההיגדים הבאים שנוגעים למצב הרפואי שבגללו את/ה נמצא באשפוז

4	3	2	1	1. בגלל המצב הרפואי שלי, אני מחמיץ את הדברים שאני הכי אוהב לעשות.
4	3	2	1	2. אני יכול להתמודד עם הבעיות הקשורות למצב הרפואי שלי
4	3	2	1	3. למדתי לחיות עם המצב הרפואי שלי
4	3	2	1	4. ההתמודדות שלי עם המצב הרפואי שלי גרמה לי להיות אדם חזק יותר
4	3	2	1	5. המצב הרפואי שלי שולט בחיי
4	3	2	1	6. למדתי רבות מהמצב הרפואי שלי
4	3	2	1	7. ישנם זמנים בהם המצב הרפואי שלי גורם לי להרגיש חסר תועלת
4	3	2	1	8. המצב הרפואי שלי גרם לחיי להיות יותר יקרים עבורי
4	3	2	1	9. המצב הרפואי שלי מונע ממני לעשות את מה שאני באמת רוצה לעשות
4	3	2	1	10. למדתי לקבל את המגבלות הנכפות עלי בגלל מצבי הרפואי
4	3	2	1	11. במבט לאחור, אני רואה שהמצב הרפואי שלי הביא גם לשינויים חיוביים בחיי
4	3	2	1	12. המצב הרפואי שלי מגביל אותי בכל דבר שחשוב לי
4	3	2	1	13. אני מסוגל לקבל בצורה טובה את המצב הרפואי שלי
4	3	2	1	14. אני חושב שאני מסוגל להתמודד עם הבעיות הקשורות במצב הרפואי שלי, גם אם הוא יחמיר.
4	3	2	1	15. המצב הרפואי שלי גורם לי, לעיתים קרובות, להרגיש חסר אונים.
4	3	2	1	16. המצב הרפואי שלי עזר לי להבין מה באמת חשוב בחיים
4	3	2	1	17. אני מסוגל להתמודד בצורה אפקטיבית עם המצב הרפואי שלי
4	3	2	1	18. המצב הרפואי שלי לימד אותי ליהנות יותר מכל רגע

ל. אנא סמן את האפשרות המתארת בצורה הטובה ביותר עד כמה הציקו לך הבעיות הבאות בזמן האשפוז. שים/י לב שהשאלון מתייחס לזמן האשפוז:

הרבה מאד	די הרבה	בינוני	מעט	בכלל לא		
5	4	3	2	1	התעלפויות או סחרחורות	1.
5	4	3	2	1	חוסר עניין	2.
5	4	3	2	1	עצבנות	3.
5	4	3	2	1	כאבים בחזה או בלב	4.
5	4	3	2	1	הרגשת בדידות	5.
5	4	3	2	1	הרגשה של מתח או לחץ	6.
5	4	3	2	1	בחילה או בעיות עיכול	7.
5	4	3	2	1	הרגשה של עצבות	8.
5	4	3	2	1	פחדים פתאומיים ללא סיבה	9.
5	4	3	2	1	קשיי נשימה	10.
5	4	3	2	1	הרגשת חוסר ערך	11.
5	4	3	2	1	התקפי פאניקה	12.
5	4	3	2	1	איברים מסוימים בגופך "נרדמים" או דוקרים	13.
5	4	3	2	1	הרגשה של חוסר תקווה לגבי העתיד	14.
5	4	3	2	1	קשה לך לשבת באותו מקום	15.
5	4	3	2	1	הרגשת חולשה בחלקים מסוימים בגוף	16.
5	4	3	2	1	מחשבות של חוסר רצון לחיות	17.
5	4	3	2	1	הרגשת פחד	18.

לא. באיזה מידה אתה מסכים כיום עם ההיגדים הבאים שנוגעים למראה שלך:

לרוב נכון מאד	לרוב נכון	לא יכול לומר נכון או לא נכון	לרוב לא נכון	לגמרי לא נכון	**האם את/ה:**
4	3	2	1	0	1. מודע/ת למראה שלך?
4	3	2	1	0	2. מרגיש/ה פחות מושכ/ת כתוצאה ממצבך הרפואי או מהטיפול שאת/ה מקבל/ת?
4	3	2	1	0	3. מרגיש לא מרוצה מהמראה שלך לבוש/ה בבגדים?
4	3	2	1	0	4. מרגיש/ה פחות נשית/גברי כתוצאה מהמצב הרפואי שלך או מהטיפול שאת/ה מקבל?
4	3	2	1	0	5. מתקשה לראות את עצמך עירומ/ה (או לחשוב על גופך ערום)?
4	3	2	1	0	6. מרגיש/ה פחות מושכ/ת מבחינה מינית כתוצאה מהמצב הרפואי שלך או מהטיפול שאת/ה מקבל/ת?
4	3	2	1	0	7. נימנע/ת מקשר עם אנשים בגלל מה שאת/ה מרגיש/ה לגבי המראה שלך?
4	3	2	1	0	8. מרגיש/ה לא מרוצה מהגוף שלך?

שאלון יומנים
Diary Questionnaire

יש למלא את השאלון היומי הזה מידי יומיים, חודש ימים או עד לתום האשפוז

על השאלות הבאות יש להשיב אחת ליומיים במלואן בערב לפני השינה. יש לנסות ולהקפיד על מילוי השאלות במקום נוח שקט ורגוע. אם מסיבה מסוימת לא הספקת למלא ביום הרלוונטי, יש להמשיך ביום המילוי הבא כרגיל עד סוף המחקר. במידה ואין אף תשובה שנראית לך מתאימה בדיוק עליך למלא את זו שהכי מתאימה בקירוב. יש לענות על השאלון במלואו כל יום.

תאריך המילוי : ____ / ____ / ____

שימו לב: אי מילוי התאריך לא יאפשר לעשות שימוש בשאלון.

שם החולה : _____   שעה : _____

שאלת גיל סובייקטיבי

Keyes, C. L. M., & Westerhof, G. J. (2012). Chronological and subjective age differences in flourishing mental health and major depressive episode. *Aging and Mental Health, 16*, 67-74

א. אנשים רבים מרגישים מבוגרים או צעירים מכפי שהם באמת. באיזה גיל הרגשת רוב הזמן <u>במהלך היום</u>? אנא הקף/הקיפי בעיגול את הגיל המשקף בצורה הטובה ביותר את הרגשתך רוב היום.

9	8	7	6	5	4	3	2	1	
19	18	17	16	15	14	13	12	11	10
29	28	27	26	25	24	23	22	21	20
39	38	37	36	35	34	33	32	31	30
49	48	47	46	45	44	43	42	41	40
59	58	57	56	55	54	53	52	51	50
69	68	67	66	65	64	63	62	61	60
79	78	77	76	75	74	73	72	71	70
89	88	87	86	85	84	83	82	81	80
99	98	97	96	95	94	93	92	91	90
109	108	107	106	105	104	103	102	101	100
119	118	117	116	115	114	113	112	111	110
				125	124	123	122	121	120

ב. אנא ציין/י כיצד הרגשת רוב הזמן <u>במהלך היום?</u>

שאלון גיל סובייקטיבי (אדפטציה שמחברת פריטים משני שאלונים)

Kastenbaum, R., Derbin, V., Sabatini, P., & Arrt, S. (1972). "The ages of me": Toward personal and interpersonal definitions of functional aging. *Aging and Human Development, 3*, 197–211.

Uotinen, V., Suutama, T., & Ruoppila, I. (2003). Age identification in the framework of successful aging. A study of older Finnish people. *The International Journal of Aging and Human Development, 56*, 173-195.

מבוגר/ת מאד מגילי	מבוגר/ת מגילי	בגילי	צעיר/ה מגילי	צעיר/ה מאד מגילי	
5	4	3	2	1	1. מבחינה נפשית הרגשתי <u>**היום**</u>
5	4	3	2	1	2. מבחינה פיזית הרגשתי <u>**היום**</u>
5	4	3	2	1	3. <u>**היום**</u> הרגשתי שאני נראה/נראית
5	4	3	2	1	4. <u>**היום**</u> עשיתי את רוב הדברים כאילו

ג. בהנחה כי הקו הבא מתאר את אורך חייך. אנא סמן על הקו X במקום בו הרגשת שאתה נמצא בו <u>היום</u>.

פריטים מתוך שאלון משמעות בחיים

Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life.*Journal of Counseling Psychology, 53*, 80-93.

לידה_____**סוף החיים**

ד. אנא דרג על סולם מ-1 עד 7 את המידה בה הרגשת היום שלחייך יש משמעות, תכלית ומובן:

	לגמרי לא נכון	לרוב לא נכון	לא נכון במידת מה	לא יכול לומר נכון או לא נכון	נכון במידת מה	לרוב נכון	לגמרי נכון
1. אני מבין את משמעות חיי	1	2	3	4	5	6	7
2. לחיי יש תחושת תכלית ברורה	1	2	3	4	5	6	7
3. אני מבין היטב מה גורם לחיי להיות משמעותיים	1	2	3	4	5	6	7

ה. השאלון הבא מכיל מילים המתארות מספר תחושות ורגשות. נא ציין/י את המידה בה הרגשת רגש זה/ תחושה זו <u>במהלך היום</u>:

שאלון רגשות

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research, 97*, 143-156.

	כלל לא או מעט מאד	מעט	במידה מתונה	די הרבה	במידה רבה ביותר
1. חיובי/ת	1	2	3	4	5
2. שלילי/ת	1	2	3	4	5
3. טוב	1	2	3	4	5
4. רע	1	2	3	4	5
5. נעים	1	2	3	4	5
6. לא נעים	1	2	3	4	5
7. מאושר/ת	1	2	3	4	5
8. עצוב/ה	1	2	3	4	5
9. מפחד/ת	1	2	3	4	5
10. שמח/ה	1	2	3	4	5
11. כועס/ת	1	2	3	4	5
12. שבע/ת רצון	1	2	3	4	5

ו. שאלון זה מכיל מספר תיאורים של תחושות ורגשות. קרא/י בבקשה כל פריט והקף/י בעיגול את התשובה הראויה לגבי כל תיאור. תשובתך תביע את המידה בה הרגשת רגש/תחושה זו <u>במהלך היום</u>.

פריטים מתוך שאלון בריאות נפשית MHC-SF

Lamers, S., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology, 67*, 99-110.

כל יום	כמעט כל יום	פעמיים או שלוש בשבוע	פעם בשבוע	פעם או פעמיים	בכלל לא	במהלך היום:
6	5	4	3	2	1	1. הרגשתי שאני אופטימי/ת: הסתכלתי אל העתיד בביטחון וציפיתי שיקרו דברים טובים
6	5	4	3	2	1	2. הרגשתי ערך עצמי גבוה
6	5	4	3	2	1	3. הרגשתי מסופק/ת מחיי
6	5	4	3	2	1	4. חשבתי שאנשים הם בבסיסם טובים
6	5	4	3	2	1	5. אהבתי את רוב הצדדים של אישיותי
6	5	4	3	2	1	6. הרגשתי שיש לי קשרים חמים ומלאי אמון עם אחרים
6	5	4	3	2	1	7. הרגשתי שחוויתי חוויות שהביאו אותי לצמוח ולהפוך לאדם טוב יותר
6	5	4	3	2	1	8. הרגשתי בטוח/ה לחשוב ולהביע את רעיונותיי ודעותיי

מחקר תפיסות גיל ובריאות – שאלון סיום
Discharge Questionnaire

תאריך המילוי: ___/___/___

שם החולה: _____ שעה: _____

אנא הקף/הקיפי את המספר שמתאר באופן הטוב ביותר את מה שחשת עד כה במהלך תקופת האשפוז:

במידה רבה מאד	במידה רבה	במידה בינונית	במידה קלה	כלל לא	
5	4	3	2	1	1. לא יכולתי לבצע מטלות הקשורות עם תפקוד יומיומי (כמו לרחוץ את עצמי, להתלבש)
5	4	3	2	1	2. לא יכולתי לדאוג לתפקודים גופניים באופן עצמאי (למשל, צורך בסיוע במתן צואה)
5	4	3	2	1	3. דאגתי לגבי העתיד שלי
5	4	3	2	1	4. הרגשתי חוסר ביטחון לגבי המחלה שלי והטיפול בה
5	4	3	2	1	5. <u>לא הרגשתי</u> שאני אדם שווה או בעל ערך
5	4	3	2	1	6. הרגשתי שלחיים שלי כבר אין משמעות או מטרה
5	4	3	2	1	7. הרגשתי שאין לי שליטה על החיים שלי
5	4	3	2	1	8. הרגשתי שמחלתי והטיפול שהיא דורשת פוגעים בפרטיותי
5	4	3	2	1	9. לא הרגשתי תמיכה מצד חברי ומשפחתי
5	4	3	2	1	10. לא הרגשתי תמיכה מצד הרופאים והאחיות
5	4	3	2	1	11. אנשים אחרים לא נהגו בי מתוך כבוד או הבנה
5	4	3	2	1	12. מבחינה מנטלית הרגשתי שאין לי עוד כוח להמשיך ולהילחם באתגרים שמציבה מחלתי

פריטים משאלון מצוקה הקשורה לכבוד

(כוללים את פריטים 1 ו-2 שבודקים תפקוד עצמאי, פריט 6 שבודק דאגה לעתיד, פריט 7 שבודק חוסר ודאות לגבי המחלה, פריט 12 שבודק שימור ערך עצמי, פריט 14 שבודק חוסר תקווה, פריט 18 שבודק תחושה של נטל על אחרים, פריט 19 שבודק חוסר שליטה על החיים, פריט 20 שבודק פרטיות, פריטים 21 ו-22 שבודקים תמיכה חברתית ופריט 23 שבודק רוח לחימה)

Chochinov, H. M., Hassard, T., McClement, S., Hack, T., Kristjanson, L. J., Harlos, M., ... & Murray, A. (2008). The patient dignity inventory: a novel way of measuring dignity-related distress in palliative care. *Journal of Pain and Symptom Management, 36*, 559-571.

תודה על הקדשת הזמן למילוי השאלונים !

נספח ג׳- טופס הסכמה מדעת, טופס מבחן פים, טופס בדיקת מיני מנטל

Appendix C – Informed Consent form, FIM Test, Mini Mental Test

Informed Consent Form

נספח ג׳ – טופס הסכמה מדעת מחקר תפיסות גיל ובריאות
טופס הסכמה מדעת

אני הח״מ :

שם משפחה _____ שם פרטי_____ מס׳ ת.ז. _____

כתובת _____ מיקוד _____

מצהיר/ה בזה כי אני מסכים/ה להשתתף בסקר כמפורט במסמך זה.
מצהיר/ה בזה כי הוסבר לי ע״י :
שם החוקר/ת הראשית <u>ד״ר נעמי היימן</u>   כדלהלן :

1. כי החוקר/ת <u>ד״ר נעמי היימן</u> קיבל/ה מוועדת האתיקה של המרכז הרפואי שהם אישור לביצוע המחקר .

2. כי הסקר נערך בנושא ״תפיסות גיל ובריאות״.

3. כי אני חופשי/ה להפסיק בכל עת את השתתפותי במחקר לא למלא שאלות המעוררות בי אי נוחות או אי נעימות מבלי שתהיה לכך השלכה כלשהי עלי.

4. כי מובטחת סודיות מוחלטת באשר לזהותי האישית בדיווח הנתונים ובכל פרסום שלהם.

5. כי בכל בעיה הקשורה למחקר אוכל לפנות לחוקר/ת <u>ד״ר נעמי היימן</u> להתייעצות נוספת.

הנני מצהיר/ה כי נמסר לי מידע מפורט על המחקר ובמיוחד הפרטים הבאים הקשורים למטרת המחקר, לשיטות, למשך הזמן הצפוי, ולאי הנוחות העלולה להיגרם.

הנני מצהיר/ה בזה כי את הסכמתי הנ״ל נתתי מרצוני החופשי וכי הבינותי את כל האמור לעיל.

_____   _____   _____
שם המשתתף/ת בסקר   חתימה   תאריך

דף מידע-שאלון "מיני מנטל" להערכת התפקוד השכלי

Mini Mental State Examination (MMSE - Folstein, et al., 1975)

שאלון מיני מנטל הוא שאלון המעריך תפקודים שכליים שונים. אפשר להשתמש במבחן כאמצעי לסקירת התפקוד השכלי של הנבדקים. הציון המרבי הוא 30 נקודות . ציון של 25 או פחות נקודות מעורר חשד להפרעה בתפקוד השכלי ותוצאה של 20 נקודות מעידה על פגיעה ודאית. המבחן בנוי מסדרה של שאלות ומבדקים שבכל אחד מהם צוברים ניקוד כאשר עונים במדויק. כל מבחן בודק תחום אחר .

תחום 1 – התמצאות

מהם : היום בשבוע, היום בחודש, החודש, השנה, העונה? (נקודה אחת על כל תשובה נכונה – סה"כ 5 נקודות (היכן אנו נמצאים : שם המדינה, האזור, העיר, בית החולים, המחלקה? (נקודה אחת על כל תשובה נכונה – סה"כ 5 נקודות)

תחום 2 – זיכרון מידי

יש להגיד לנבדק שמות של שלושה עצמים בלתי קשורים : מכונית, דלת, פרח. בסיום יש לבקש מהנבדק לחזור עליהם. חזרה ראשונית זו מעניקה את הציון בסעיף זה : (נקודה לכל פריט שנזכר – סה"כ 3 נקודות). במידה שהנבדק אינו זוכר יש לחזור על הניסיון עד שש פעמים בכל פעם שלושה פריטים שונים אם הנבדק אינו זוכר אותם אי אפשר לבדוק את יכולת הזיכרון בסעיף 7 .

תחום 3 – ריכוז וחשבון

יש לבקש מהנבדק להתחיל במספר 100 ולהחסיר ממנו כל פעם 7. לאחר חמישה תרגילי חיסור יש להפסיק. אם הנבדק מתקשה אפשר להחסיר באופן דומה 2 ממספר 30. (נקודה אחת לכל תשובה נכונה – סה"כ 5 נקודות)

. א

תחום4–שפה

הראו לנבדק עט ושעון ובקשו אותו לקרוא בשמותיהם (מה זה?) (נקודה לכל פריט – סה"כ 5 נקודות)

ב. הוראה לנבדק : חזור על המשפט "גנן גידל דגן בגן". (חזרה נכונה - 1 נקודה – אם מבוצעת טעות כלשהי, אין לתת ניקוד)

תחום 5 – ביצוע הוראה של שלושה שלבים

אומרים לנבדק : "קח נייר בידך הימנית, קפל אותו לשתיים ושים אותו על הרצפה". (לכל שלב ניתנת נקודה – סה"כ 3 נקודות)

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תחום 6 – קריאה

יש לתת לנבדק לקרוא את המשפט ״עצום את העיניים״. על המשפט להיות כתוב באותיות דפוס גדולות יחסית.)אם הנבדק עצם את עיניו - 1 נקודה)

תחום 7 – כתיבה

יש לתת לנבדק דף נייר חלק ולבקש ממנו לכתוב משפט כלשהו. על המשפט להכיל שם עצם ופועל ולהיות הגיוני. אין להכתיב לנבדק את המשפט. אין הכרח בדקדוק או כתיבה נכונים.)ביצוע תקין – 1 נקודה)

תחום 7 – זיכרון

יש לבקש מהנבדק לזכור את שלושת הפריטים מסעיף 3.)נקודה אחת לכל פריט שנזכר – סה״כ 3 נקודות)

תחום 8 – העתקה

על דף נייר יש לצייר שני מחומשים הנחתכים ביניהם. לבקש מהנבדק להעתיק בדייקנות את הציור.)יש לבדוק את כל 10 הזוויות, ועל שתיים מהן להיחתך כדי לזכות ב-1 נקודה

רעד או סיבוב של המחומשים אינו פוגע בניקוד)

Functional Independence Measure (FIM)

The Functional Independence Measure (FIM) is an 18-item measurement tool that assesses the physical, psychological and social function of patients with functional mobility impairments. It is mostly used to assess a patient's disability and as a result his dependence on care and his condition after rehabilitation and treatment intervention (Lincacre et al., 1994).

תקציר

בכינוס של הפורום העולמי הכלכלי האחרון שנערך בדאבוס בינואר 2020, דווח, שלראשונה בהיסטוריה, מספר הזקנים והזקנות (גיל 65 ומעלה) עולה על מספר הילדים (גיל 18 ומטה). תופעה זו, של יתר אריכות ימים של האוכלוסייה, הביאה לעלייה הולכת וגוברת של ההתעניינות בתהליכי הזקנה, ובשונות המובנת מאליה של הדרך בה אנשים חווים את ההזדקנות. אחת מהתוצאות של העניין ההולך וגובר בתהליכי הזיקנה היא הרחבת הבסיס המחקרי של תהליכי הזיקנה. מתוך מחקרים אלה עולה, שגיל כרונולוגי, שעד כה היווה את אחד מהגורמים הדומיננטיים הקובעים בחייו של האדם, בהיותו סמן חשוב של זכויות חוקתיות, וחברתיות, מעמד חברתי ותחומי אחריות, הפסיק למלא את ייעודו כמנבא בלעדי של תוצאות בריאותיות ופסיכולוגיות במחצית השנייה של החיים. סיבה אפשרית לכך היא האתגרים הבריאותיים, הנפשיים, והחברתיים עמם על האדם הזקן להתמודד מהארכת חייו, ושעתה עולים מעל פני השטח. הגיל הכרונולוגי הוא אמנם מנבא טוב של הרבה תוצאות התפתחותיות, שמתרחשות במחצית הראשונה של החיים, אולם, האפקטיביות של גיל זה כמנבא, יורדת במחצית השנייה של החיים. מתוך מספר גדול של מחקרי אורך בתחום הגרונטולוגיה עולה שקיימת שונות בין-אישית גדולה בדרך בה אנשים מתפקדים כאשר הם מזדקנים ולפיכך נדרשים מדדים אחרים או נוספים שישקפו שונות זו.

התברר, שגיל סובייקטיבי (subjective age) – הדרך בה האדם תופש את גילו, מהווה מנבא אלטרנטיבי של תוצאות התפתחותיות במחצית השנייה של החיים. אומדן זה נמצא כמנבא חזק יותר מגיל כרונולוגי של תוצאות בריאותיות ופסיכולוגיות בקרב אנשים זקנים, בייחוד כאלה שמתגוררים בקהילה. המחקר על הגיל הסובייקטיבי החל במחצית השנייה של המאה העשרים והחלוצים של מחקר זה ניסו להבין איך הפרט, ובייחוד הפרט בגיל זיקנה, תופס את גילו ואת תהליך ההזדקנות שלו. חוויות סובייקטיביות ומודעות לתהליך ההזדקנות הם חלק בלתי נפרד מהתהליכים פסיכולוגיים של אנשים בגיל הזיקנה. גיל סובייקטיבי משקף תפיסות עצמיות של גיל, הדרך בה האדם תופס את המראה שלו, כיצד הוא מתנהל, את מצבו הפיזי ועוד. העלייה בתוחלת החיים והתארכות תקופת הזיקנה יצרו קבוצה של 'זקנים צעירים', במדינות המפותחות לפחות, הממשיכה להיות פעילה בכל תחומי החיים לאחר הפרישה מחיי העבודה, בתחומי העיסוק השונים, בהתנדבות, ובניצול מקסימאלי של תרבות הפנאי. 'זקנים צעירים' אלה מעידים על עצמם שהם מרגישים הרבה יותר צעירים מגילם הכרונולוגי, מה שתואם ממצאים ממחקרים רבים בתחום, לפיהם בני 65 למעלה מרגישים בממוצע צעירים ב-13 שנים מגילם הכרונולוגי. בנוסף, ממצאים מהמחקר הענף על הגיל הסובייקטיבי מעידים על כך, שלמושג זה יש כושר ניבוי של תוצאות בריאותיות פיזיות וקוגניטיביות, ואריכות ימים. הדבר הביא להנחה שמן הראוי לבדוק האם הגיל הסובייקטיבי יכול לנבא תוצאות קליניות ספציפיות.

לאור האמור לעיל, מטרת המחקר הנוכחי הייתה להרחיב את ידיעותינו על יחסי הגומלין בין שני המשתנים, גיל סובייקטיבי ועצמאות תפקודית, בקרב זקנים וזקנות שעברו שיקום בעקבות שבר אוסטיאופורוטי או שבץ מוחי. על אף שמחקרים רבים ביססו את מעמדו של האומדן 'גיל סובייקטיבי' ככזה שמנבא היטב תוצאות התפתחותיות נפשיות, פיזיולוגיות, ותפקודים נוספים, כמעט ולא נעשו ניסיונות כדי לבדוק האם גיל סובייקטיבי יכול לנבא תפקוד במדגם קליני של אנשים זקנים שסובלים ממחלות רקע. למיטב ידיעתי, קיימים רק שלושה מחקרים שבחנו את הקשר ההדדי בין גיל סובייקטיבי ובין תוצאות בריאותיות בקבוצות קליניות ובאופן ספציפי, בקרב זקנים המתמודדים עם מחלות אונקולוגיות. כמו כן, קיימים מעט מאד מחקרי אורך שבדקו את יחסי הגומלין ההדדיים בין מדדי גיל סובייקטיבי וממצאים קליניים מדידים בהם נעשה שימוש במודל הצלבה מושהית (cross-lagged model) ושמבוסס

על המודל של ווסטרהוף וורם (Westerhof & Wurm, 2015). יתרה מזו, למיטב ידיעתי, לא קיים מחקר בו נבדקה ההשפעה של מגדר ומודעות לגיל כמשתנים ממתנים על הקשרים הללו, ואת השימוש ברווחה כמשתנה מתווך את הקשרים הללו. לבסוף, לא נעשה כל ניסיון לבדוק איך הסוגים השונים של הגיל הסובייקטיבי (לדוגמא, 'גיל המראה החיצוני' ו 'גיל ההתנהגותי') קשורים לבריאות בקרב נשים לעומת גברים.

הקשרים ההדדיים בין גיל סובייקטיבי ובין עצמאות תפקודית נבדקו על ידי מודלים של הצלבה מושהית שהתבצעו על ידי תוכנת AMOS. הניתוחים בחנו בעת ובעונה אחת את ההשפעה של גיל סובייקטיבי בקבלה לשיקום על התפקוד בשחרור מהשיקום, וכן את ההשפעה ההופכית של התפקוד בקבלה לשיקום על הגיל הסובייקטיבי בשחרור. בעזרת המודל נבדקו גם ההשפעות האוטו-רגרסיביות של הגיל הסובייקטיבי והתפקוד (ההשפעה של גיל סובייקטיבי בקבלה לשיקום על גיל סובייקטיבי בשחרור, וההשפעה של התפקוד בקבלה לשיקום על התפקוד בשחרור מהשיקום).

בבסיס המחקר הנוכחי הוצבה השערה מרכזית ועוד חמש השערות שנובעות מהשערה זו. ההשערה המרכזית התייחסה להדדיות הדו-כיוונית בקשרים בין גיל סובייקטיבי ובין תפקוד קליני. לפי השערה זו, גיל סובייקטיבי בקבלה לשיקום ינבא תפקוד בשחרור מהשיקום, ובכיוון ההפוך, תפקוד בקבלה לשיקום ינבא גיל סובייקטיבי בשחרור. כלומר, גיל סובייקטיבי צעיר בקבלה לשיקום ינבא תפקוד טוב יותר בשחרור מהשיקום, ותפקוד טוב בקבלה לשיקום ינבא גיל סובייקטיבי צעיר יותר ביציאה מהשיקום.

ההשערה שנייה התייחסה לתחושת הרווחה במהלך השיקום שתשמש כגורם המתווך את ההשפעה ההדדית שבין גיל סובייקטיבי ובין התפקוד בשיקום. כלומר, ככל שהגיל הסובייקטיבי בכניסה לשיקום יהיה צעיר יותר, תחושת הרווחה במהלך השיקום תהיה גבוהה יותר, וכך התפקוד ביציאה משיקום יהיה טוב יותר. כמו כן, ככל שהתפקוד בכניסה לשיקום יהיה טוב יותר, תחושת הרווחה במהלך השיקום תהיה גבוהה יותר, וכתוצאה מכך הגיל הסובייקטיבי ביציאה מהשיקום יהיה צעיר יותר.

ההשערה השלישית התייחסה למודעות לגיל ולכך שהההשפעה ההדדית בין הגיל הסובייקטיבי ובין התפקוד בשיקום תהיה חזקה יותר בקרב אלה שיש להם מודעות גבוהה לגיל. ההשערה הרביעית התייחסה למיתון ההשפעה ההדדית העקיפה בין גיל סובייקטיבי ובין תפקוד בשיקום דרך הרווחה ע״י מודעות לגיל. באופן ספציפי, שיער כי רווחה תתווך את ההשפעה ההדדית של הגיל הסובייקטיבי ותפקוד בשיקום, במיוחד כאשר המודעות לגיל היא גבוהה.

ההשערה החמישית התייחסה למשתנה המגדר שישמש כממתן של ההשפעות ההדדיות שבין הגיל הסובייקטיבי ובין התפקוד בשיקום, כך שבקרב נשים ההשפעה ההדדית תהיה בעיקר בין הגיל סובייקטיבי שמתייחס למראה החיצוני ותפקוד בשיקום, ובקרב גברים ההשפעה ההדדית תהיה בעיקר בין גיל סובייקטיבי שמתייחס להתנהגות והתנהלות בסביבה ותפקוד בשיקום.

ההשערה השישית התייחסה לעוצמת האפקט הממתן של המגדר. אפקט זה יהיה חזק במיוחד בקרב אנשים עם מודעות גבוהה לגיל (אינטראקציה בין מגדר ומודעות לגיל). כלומר, השפעות הדדיות חזקות בין הגיל הסובייקטיבי של המראה החיצוני לתפקוד בשיקום יהיו בקרב נשים עם מודעות גבוהה לגיל, והשפעות הדדיות חזקות בין הגיל שמתייחס להתנהגות והתנהלות בסביבה ותפקוד בשיקום יהיו בקרב גברים עם מודעות גבוהה לגיל.

המחקר הנוכחי כלל 193 נבדקים בגיל 65 ומעלה (גיל ממוצע 78.32), ששהו בשלושה מרכזי שיקום גריאטריים ברחבי הארץ. ממוצע ימי האשפוז היה 28 ימים. המדגם כלל 64.4% נשים ו-34.1% גברים, 58% חיו בגפם. למעלה ממחצית הנבדקים היו אלמנים או גרושים. קצת פחות ממחציתם היו בעלי השכלה אקדמית או על-תיכונית, ורובם דווחו על מצב כלכלי ובריאותי טוב. מדובר במחקר אורך בו המשתנים

המרכזיים היו גיל סובייקטיבי ותפקוד. במחקר זה נבדקו הממדים הבאים של גיל סובייקטיבי: 'גיל המראה', 'גיל ההתנהגות', 'הגיל הפיזי', וה'גיל הנפשי'. הגיל הסובייקטיבי נמדד כתשובה לשאלה: "באיזה גיל את/ה מרגישה שאת/ה?" בקבלה לשיקום ובשחרור וכן במהלך השיקום. התפקוד נמדד בקבלה לשיקום ובשחרור על ידי הערכה תפקודית (Functional Independence Measurement test -FIM). רווחה נפשית ומודעות לגיל נמדדו במהלך האשפוז.

כאמור, ההשערה המרכזית של מחקר זה הניחה שיהיה קשר הדדי דו-כיווני בין גיל סובייקטיבי ובין עצמאות תפקודית, לפיה גיל סובייקטיבי בקבלה לשיקום ינבא עצמאות תפקודית בשחרור מהשיקום. כלומר, גיל סובייקטיבי צעיר (מהגיל הכרונולוגי) בכניסה לשיקום ינבא תפקוד טוב יותר עם השחרור מהשיקום. חלק זה של ההשערה קיבל אישוש. החלק השני של ההשערה, לפיו עצמאות תפקודית בקבלה מנבאת גיל סובייקטיבי בשחרור מהשיקום, לא קיבל אישוש.

נראה כי עם התקדמות השיקום, רמת התפקוד עולה, אבל לא במידה כזאת המובילה לשינויים משמעותיים בגיל הסובייקטיבי. מצד שני, גיל סובייקטיבי צעיר בתחילת השיקום מהווה פוטנציאל לחוסן נפשי ומפעיל תהליכים של מוטיבציה ורווחה שמובילים לניבוי תפקוד ביציאה. בנוסף, ההשפעות האוטו- רגרסיביות היו מובהקות: גיל סובייקטיבי בקבלה לשיקום ניבא גיל סובייקטיבי בשחרור, ועצמאות תפקודית בקבלה לשיקום ניבאה עצמאות תפקודית בשחרור מהשיקום. לסיכום ההשערה המרכזית ניתן לומר, שהממצאים מתקפים את התיאוריה שטוענת שתפיסות זיקנה הן בבחינת נבואה המגשימה את עצמה. במילים אחרות, אם תתפוש את עצמך כזקן, רמת התפקוד שלך בהמשך תהיה נמוכה יותר. הכיוון ההפוך, שטוען שמי שלא בריא יפתח תפיסות זיקנה שליליות, קיבל כאן פחות תמיכה.

ההשערה השנייה שבדקה האם רווחה מתווכת את ההשפעות ההדדיות בין גיל סובייקטיבי ותפקוד קיבלה תמיכה חלקית בלבד. הרווחה שימשה גורם המתווך את הקשר בין גיל סובייקטיבי בתחילת המחקר לתפקוד בשחרור. כלומר, ככל שהגיל הסובייקטיבי בכניסה לשיקום יהיה צעיר יותר, תחושת הרווחה במהלך השיקום תהיה גבוהה יותר והתפקוד בסיומו יהיה טוב יותר. לא נמצאה תמיכה לכך שהרווחה מתווכת את הקשר בין תפקוד בכניסה לשיקום וגיל סובייקטיבי ביציאה מהשיקום.

לפי ההשערה השלישית המודעות לגיל תשמש כגורם הממתן את ההשפעות ההדדיות בין גיל סובייקטיבי ובין תפקוד. השערה זו לא קיבלה תמיכה. לא נמצא קשר בין המודעות לגיל או בין האינטראקציה בין מודעות לגיל וגיל סובייקטיבי בקבלה לתפקוד ביציאה מהשיקום.

לפי ההשערה הרביעית, הרווחה הנפשית תתווך את ההשפעה ההדדית של הגיל הסובייקטיבי והתפקוד בשיקום במיוחד כאשר המודעות לגיל גבוהה. השערה זו לא קיבלה תמיכה. לא נמצא קשר בין המודעות לגיל והאינטראקציה בין מודעות לגיל וגיל סובייקטיבי בכניסה לשיקום ובין הרווחה הנפשית.

להשערה החמישית היו שני חלקים. בחלק הראשון לא נמצא קשר בין מגדר ואינטראקציה בין מגדר וגיל סובייקטיבי של המראה בכניסה לשיקום ובין תפקוד בשחרור מהשיקום. בחלק השני לא נמצא קשר בין מגדר ואינטראקציה בין מגדר וגיל סובייקטיבי ממוקד בהתנהגות בקבלה לשיקום ובין תפקוד בשחרור מהשיקום.

להשערה השישית היו גם כן שני חלקים. בחלק הראשון, נמצא כי מגדר ומודעות לגיל מיתנו את ההשפעה בין גיל המראה החיצוני ותפקוד בשחרור מהשיקום, כך שההשפעה הייתה חלשה ביותר בקרב גברים עם מודעות נמוכה לגיל. החלק השני בו דובר על המגדר והמודעות לגיל כגורמים ממתנים של ההשפעות בין גיל ההתנהגות ובין תפקוד בשחרור מהשיקום לא קיבל תמיכה.

בפרק הדיון צוינו מגבלות המחקר הנוגעות לאפיונים הדמוגרפיים של המדגם (יודעי עברית בלבד ללא אוכלוסיות מיעוטים). לצד זה, למחקר מספר חוזקות. זה המחקר הראשון (למיטב ידיעתי) בו הודגם

שגיל סובייקטיבי מנבא תוצאות קליניות ספציפיות שנמדדות על ידי מבחן הערכה תפקודית. בנוסף, המחקר כלל מדגם גדול ונערך בשלושה מוסדות שיקום נפרדים, איסוף המידע נעשה על ידי ראיונות בשיטה השיתופית, וזה המחקר הראשון למיטב ידיעתי שבדק את ההשפעות הממתנות של מגדר ומודעות לגיל על הקשרים בין גיל סובייקטיבי של המראה ושל ההתנהגות ובין עצמאות תפקודית. הוצגו אפשרויות יישום של הממצאים בתחום האבחון וההתערבות הטיפולית. בנוסף, הועלו המלצות למחקרים עתידיים שיכללו סוגי אוכלוסיות נוספות, וירחיבו את כלי המחקר כך שיכללו שאלונים מקיפים יותר על אובדנים ורווחים הכרוכים בגיל, והמשמעות הקוגניטיבית והחברתית שלהם.

לסיכום, המחקר הנוכחי בחן קשרים הדדיים בין גיל סובייקטיבי ובין עצמאות תפקודית, לצד השפעתם הממתנת של המודעות לגיל של הנבדקים בעלי גיל מתקדם במיוחד והמגדר שלהם, והתיווך של הרווחה הנפשית של נבדקים אלה. תוצאות המחקר מצביעות על התרומה האפשרית של התחשבות בגיל הסובייקטיבי של המטופל הזקן בבניית פרוטוקולים של טיפול ושיקום. דבר זה עשוי לייעל תהליכי שיקום ולהפחית מהעלויות.

<h1 style="text-align: center;">תוכן העניינים</h1>

הגיל הסובייקטיבי שמתייחס להתנהגות והתנהלות בסביבה ותפקוד בשיקום בקרב

גברים עם מודעות גבוהה לגיל.

אָמַר רַבִּי עֲקִיבָא : לָמָּה נִמְשְׁלוּ יִשְׂרָאֵל לָעוֹף? מָה עוֹף אֵינוֹ פוֹרֵחַ בְּלֹא כְּנָפַיִם, אַף יִשְׂרָאֵל אֵינָן יְכוֹלִין לַעֲמֹד בְּלֹא זְקֵנִים. גָּדוֹל כֹּחַ הַזְּקֵנִים. אִם זְקֵנִים הֵם, חֲבִיבִין לִפְנֵי הַקָּדוֹשׁ בָּרוּךְ הוּא. וְאִם נְעָרִים, נִטְפְּלָה בָּהֶן יַלְדוּת (תנחומא, שמות כט).

עבודה זו נעשתה בהדרכתו של:

פרופסור עמית שרירא

ראש החוג המשולב למדעי החברה אוניברסיטת בר-אילן

מבט מגדרי על הקשר בין גיל סובייקטיבי ועצמאות תפקודית
בעקבות שברים אוסטאופורוטיים ושבץ

מאת

דפנה מגדה קליר

היחידה ללימודים בין תחומיים, התכנית ללימודי מגדר

הוגש לסנט של אוניברסיטת בר-אילן

רמת גן   ניסן, תשפ״א