

The Short-Term Association Between Acute Physical Symptoms and Negative Affect in
Older Adults:
The Buffering Effects of Goal Adjustment Capacities

Erin Dunne

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Abstract

The Short-Term Association Between Acute Physical Symptoms and Negative Affect in Older Adults: The Buffering Effects of Goal Adjustment Capacities

Erin Dunne

The onset of physical illness can contribute to depressive symptoms in the elderly. In turn, depression can also have a detrimental impact on physical health. This reciprocal relationship may produce a downward spiral, characterized by low subjective well-being and subsequent health declines.

An important facet contributing to psychological well-being is the attainment of daily- and life-goals. However, the experience of acute physical symptoms (APS) may hinder the pursuit of these goals. In such circumstances, individuals' goal adjustment capacities can help maintain a sense of control and prevent the experience of negative emotions that stem from the constraints on goal attainment. Specifically, goal disengagement can protect individuals from the negative effect of failure, while goal reengagement can help individuals maintain a sense of purpose in life.

The objective of this study was to examine the short-term relations between APS and negative affect in 215 older adults. The experience of APS was expected to contribute to same-day negative affect and to an increase in negative affect across three normal days. No reciprocal impact of negative affect on APS was anticipated. Furthermore, it was expected that goal adjustment capacities would buffer the negative effects of APS on emotional well-being.

The results demonstrated that APS predicted both same-day and an increase in negative emotions across days. Additionally, both goal adjustment capacities moderated

the relationship between APS and same-day negative affect, while only goal disengagement buffered the relationship across days. Negative affect did not contribute to the experience of increased APS across days. Implications of the findings for successful aging are discussed.

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Introduction

A substantial portion of our population will be entering into later adulthood in the approaching years, with 22% of the Canadian population estimated to be 65 years or older by the year 2031 (Rosenberg & Moore, 1997). Despite the increasing life expectancy, older adults are not necessarily living healthier lives, as quality of life may suffer in later adulthood. Indeed, it is expected that over one million community-dwelling elderly will suffer from some level of health disability by the year 2011 (Rosenberg & Moore). In addition, research has linked many common medical ailments characteristic of late adulthood (e.g., rheumatoid arthritis, cancer, diabetes) to poor psychological well-being, including depressive symptomatology (Anderson, Freedland, Clouse, & Lustman, 2001; Frank et al., 1988; Hopwood & Stephens, 2000; see also, Murrell, Himmelfarb, & Wright, 1983), thereby suggesting that physical illness may impact quality of life more globally.

Although the relationship between physical illness and psychological distress is one of the most robust research findings in the aging literature (e.g., Dew, 1998; Lenze et al., 2001), the specific short-term relations between these two factors have not been studied comprehensively. In addition, while acute physical symptoms may be debilitating in and of themselves, they may also affect older adults' psychological functioning through their impact on the attainment of daily goals. For example, an individual who awakens with acute pain in their lower back may not be able to accomplish their goal for that day (e.g., gardening), which can contribute to the experience of negative emotions for that individual. Therefore, research examining processes involved in the management of goal-related consequences stemming from physical health stressors is important.

One line of research has identified active investment in overcoming manageable health challenges (e.g., acute physical symptoms, such as pain; Wrosch, Schulz, & Heckhausen, 2002; Wrosch, Schulz, Miller, Lupien, & Dunne, in press) as a valuable strategy for older adults to maintain subjective well-being. While it is intuitively plausible that engagement may be beneficial for coping with manageable health-related threats, it is proposed that goal adjustment strategies may also be beneficial for dealing with acute physical symptoms. Specifically, this study proposes that goal disengagement and goal reengagement can be adaptive processes to manage daily acute physical symptoms, above and beyond the impact of active coping. These processes are conceptualized as potential moderators in the relationship between poor health and subsequent declines in psychological well-being. While goal disengagement involves “letting go” of a goal that is no longer attainable, goal reengagement involves turning one’s attention and energy to the pursuit of other meaningful and potentially attainable life goals (Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003). Thus, the present study explores the relationship between acute physical symptoms and negative affect using a short-term longitudinal approach based on the assessment of acute physical symptoms and negative across three normal non-consecutive days. In this regard, this research aims to explore the potential benefits of adaptive goal adjustment capacities in buffering the adverse consequences of acute physical symptoms on older adults’ psychological well-being.

Physical Health Challenges in Later Adulthood

The Impact of Physical Illness on Psychological Well-Being Among Older Adults

Marked decline in the mortality rate of middle-aged and older adults in the latter

half of the past century has contributed to an increase in life expectancy in the industrialized nations (Ory, Cox, Gift, & Abeles, 1994). Indeed, the most rapidly growing segment of the population has now shifted to older adults over the age of 85 years (Williamson, Shaffer, & Parmelee, 2000; Aging America, 1991, as reported by Ory et al.). However, along with the rising life expectancy comes the increased potential for the experience of physical challenges in later years. Although research has attempted to dispel the stereotyped view of the elderly as a dependent and ailing population (e.g., Baltes & Baltes, 1986; Carstensen, 1995), the reality remains that the probability and prevalence of chronic illness and health problems increases in later adulthood. Indeed, physical health decline is a common and often inevitable consequence of aging, with over 80% of Americans estimated to suffer from at least one chronic illness, which may contribute to the experience of pain and other acute physical symptoms on a daily basis (Abeles, Gift, & Ory, 1994). Chronic illness may also contribute to impairments in older adults' ability to carry out activities of daily living (Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2005), and can lead to dependency in this population, usage of health care services, and is predictive of nursing home and hospital admittance (Ory et al.). Although research traditionally was concerned primarily with the societal costs associated with the aging population, more recent research on health and aging has shifted the focus onto the consequences of these health challenges for older adults' psychological well-being (Wrosch, Schulz, & Heckhausen, 2004).

Research during the past three decades has demonstrated convincing evidence that physical illness can contribute to psychological distress and depressive symptoms if individuals are unable to effectively cope with these health challenges (e.g., Kosloski,

Stull, Kercher, & Van Dussen, 2005). In addition, the risk of experiencing depressive symptoms resulting from physical illness is slightly higher in older, versus younger, adults (Turner & Noh, 1988). Physical illness has been linked to anxiety, low self-esteem, and depression in the elderly population (Aneshensel, Frerichs, & Huba, 1984; Viney & Westbrook, 1981). In fact, a meta-analytic review by Lenze et al. (2001) suggested that physical illness was a substantive risk factor for late-life depression as a result of the associated experience of the negative events, activity restriction, and perceived loss of control. Similarly, Aneshensel, Frerichs, and Huba found that activity restriction stemming from physical disability could lead to depressive symptoms both immediately and over time.

Two developmental pathways through which physical illness can contribute to low psychological well-being have been proposed in the aging literature (Wrosch et al., 2002, 2004; Wrosch, Dunne, Scheier, & Schulz, 2006). First, physical illness may directly contribute to depression through associated neuroanatomical and neurochemical changes. For example, approximately 40% of individuals with Parkinson's Disease subsequently develop depression, which is thought to stem, in part, from biochemical changes in the brain (Kostic, Lecic, Filipovic, & Stojanovic, 1995). Specifically, research has indicated that individuals with Parkinson's Disease suffer from a deficiency of a serotonin metabolite called 5-HIAA, which can lead to the development of depression (Mayeux, Stern, Sano, Williams, & Cote, 1988).

A second pathway through which physical illness contributes to negative emotions is through the experience of symptom-related consequences such as acute physical symptoms and functional disabilities. Acute physical symptoms are

conceptualized as transient physical impairments, impacting older adults' lives on a daily basis. Acute physical symptoms involve controllable and impermanent symptoms (e.g., pain) that represent potentially manageable health challenges (Wrosch et al., 2002). Although acute physical symptoms may be addressed by appropriate action, they still, nonetheless, represent a potential threat of contributing to the psychological distress of older adults. For example, an individual experiencing acute lower back pain upon awakening is at an increased risk for the experience of psychological distress from the direct experience of pain and the inability to perform the daily activities they had aimed to achieve during that day.

Physical illness may also affect negative emotions through the subsequent development of functional disabilities. Functional disabilities are associated with more chronic and intractable health conditions (e.g. severe visual impairment), and have been shown to be highly prevalent in later adulthood, with 54% of disabilities in the United States being experienced by adults aged 65 years and older (Beckett et al., 1996; Yang & George, 2005). Functional disabilities can constrict an individual's ability to carry out tasks pertaining to activities of daily living related to self-care (e.g., bathing or dressing), as well as impair their capacity to perform household tasks and responsibilities involved in the maintenance of an independent lifestyle (e.g., preparing meals or using the telephone). Functional disabilities can be conceptualized as ongoing stressful events that increase the likelihood of depression over time. In addition, impairments in instrumental and social functioning stemming from these disabilities can isolate older adults and consequently contribute to impaired mental health (Avison & Turner, 1988). Such restrictions may further decrease an individual's sense of self-control and autonomy,

thereby contributing to negative emotions (Yang & George).

Thus, both acute physical symptoms and functional disabilities may affect psychological well-being through a loss of a sense of control over the environment. Indeed, perceived control has been identified as an essential component of successful aging, with research indicating that it is one of the most important contributors to both psychological and physical well-being (e.g., Abeles, 1991; Baltes & Baltes, 1986; Lachman, Ziff, & Spiro, 1994; Rodin, 1986). Although acute physical symptoms and functional disabilities may display some overlap (e.g., the acute physical symptom of pain may be the resultant consequence of an underlying chronic condition such as arthritis that has resulted in functional disabilities), research has shown that they each represent separate constructs that are only moderately correlated to one another (Wrosch et al., 2002). In addition, a distinguishing feature between these two types of health concerns is the relatively intractable nature of functional disabilities as compared to the more controllable acute physical symptoms.

Previous research has focused primarily on the psychological consequences of functional disabilities in older adults. For example, studies have identified the resultant functional impairment of physical illness as a significant risk factor for the subsequent development of depression in the elderly (Zeiss, Lewinsohn, Rohde, & Seeley, 1996), while research focusing specifically on functional disabilities has indicated that impairments related to individuals' abilities to carry out functional activities of daily living are associated with increased depression severity and anxiety (Alexopoulos et al., 1996). Furthermore, the association between functional disabilities and depressive symptoms has been supported by studies using cross-sectional community-based samples

(Bruce, Seeman, Merrill, & Blazer, 1994), and time-structured observations in longitudinal designs (Yang & George, 2005).

Other research has shown that the experience of acute physical symptoms can also be a contributor to the development of depression. For example, in a recent study, Nakao and Yano (2006) found that the experience of particular acute physical symptoms predicted major depression over a one-year time period in a sample of middle-aged Japanese workers. Specifically, the experience of lower back pain, abdominal pain, and dizziness contributed to the development of a clinically diagnosable level of depression over a one-year time-span. Additionally, in one of the few studies focusing on acute physical symptoms in older adults, Wrosch, Schulz, and Heckhausen (2002) examined the differential impact of functional disabilities and acute physical symptoms on depressive symptomatology. The researchers found that the presence of acute physical symptoms contributed to depressive symptoms in an immediate time-span, and that when controlling for these acute physical symptoms, functional disabilities did not significantly contribute to depressed mood. However, the same pattern of results did not emerge over an approximate one-year time-span, as neither acute physical symptoms nor functional disabilities predicted change in depressive symptoms over time.

Thus, an important question relates to the interdependency of functional disabilities and acute physical symptoms in predicting depression. Although some studies point to the independent effects of acute physical symptoms, and have shown that acute physical symptoms can predict depressive symptoms above and beyond functional disabilities (Wrosch et al., 2002), other studies suggest that functional disabilities and acute problems share much of the variance in predicting quality of life indicators (e.g.,

Murrell, Meeks, & Walker, 1991; Williamson & Schulz, 1995).

Results from these studies imply that more research is needed to disentangle functional disabilities and acute physical symptoms in order to determine the specific impact of acute physical symptoms on psychological distress. Furthermore, although research shows preliminary support for the role of acute physical symptoms in the experience of negative mood states in the elderly, it is apparent that more research focusing specifically on acute physical symptoms is needed to clearly establish this link. While existing research has provided the initial framework for investigating the immediate and long-term contribution of acute physical symptoms to negative affect in the elderly, research has failed to specifically investigate the consequences stemming from these symptoms, while at the same time ignoring the short-term daily effect of these symptoms on negative mood. That is, research to date has neglected to investigate how the experience of acute physical symptoms can impact the daily lives of older adults, and their possible contribution to the experience of negative emotions within a short timeframe, above and beyond the effects of functional disabilities.

The Impact of Psychological Distress on Physical Illness Among Older Adults

While physical health may adversely impact older adults' psychological well-being, there is evidence of a reciprocal relationship between these variables. In fact, research has also focused on the impact of negative affect on the development of physical illness among older adults. Specifically, depression has been conceptualized as a major risk factor in the development of physical illness in older adults (see Bruce, 2000; Lenze et al., 2001). As it is estimated that over two million adults over the age of 65 suffer from depressive symptoms in the United States (Mills, 2001), and that the prevalence of

depressive symptoms is significantly higher for adults over the age of 65 (Benazzi, 2000), the consequences of negative affect on physical illness are a central concern for this population.

Indeed, analogous to the predictive relationship between physical illness and the psychological consequences, psychological distress, such as depression, has been linked to a decline in physical health in the older population. Pathways between depressive symptoms and health decline have been identified in the literature (e.g., Lenze et al., 2001; Wrosch et al., 2004, 2006), and include psychosocial, cognitive, and biological mechanisms. Research has indicated that the onset of depressive symptomatology may represent a significant risk factor for the development of impairment in the performance of activities of daily living, even for those older adults who were initially high functioning (Bruce et al., 1994). Indeed, Bruce and colleagues found that depressive symptoms were predictive of impairments of activities of daily living through the persistence of a decline in resources symptomatic of depression, such as motivation and fatigue. This type of disability may contribute to further declines in global health through poor nutrition or appetite suppression, which can lead directly to disease or may weaken an individual through substantive weight loss.

Motivation to engage in health-sustaining activities may also be compromised by the experience of depressive symptoms in the elderly, and health-compromising behaviours, such as consuming alcohol or smoking, may be more readily engaged in by those with depression. A depressed older adult may also delay visits to the doctor, or struggle with medication compliance. In addition, sleep disturbance, one symptom of depression, may prevent an older adult from engaging in healthy activities in their life,

and the lower threshold for pain experienced by affectively disturbed individuals (Williamson & Schulz, 1992) may further contribute to physical inactivity. Older adults with depressive symptoms have also shown impaired immunological functioning through cortisol dysregulation (Wrosch, Schulz, et al., in press), increasing their vulnerability to the development of disease.

A large body of literature has confirmed older adults with depressive symptoms as at a substantive risk for health decline (e.g., Gurland, Wilder, & Berkman, 1988; Han, 2002; Lenze et al., 2001), the development of specific health problems (e.g., cardiac disease; Musselman, Evans, & Nemeroff, 1998), and increased mortality (Schulz et al., 2000) as compared to their non-depressed peers. Importantly, research has also indicated that although the resulting negative impact of psychological distress on physical health may not be evidenced immediately, it is a process that progresses over time (Aneshensel et al., 1984). That is, compared to the immediate impact of physical illness on depression, depressive symptoms' impact on physical illness is mediated by variables that influence health over a longer time period.

Lenze et al. (2001) reviewed cross-sectional and longitudinal studies in both community-sampled and clinical observational studies and found a significant association between depressive symptomatology and subsequent physical disability. Participants in these studies experiencing depressive symptoms were at a greater risk of developing physical illness over time. Importantly, given the variability of depressive symptoms in older adults, researchers have also surmised that the experience of depressive symptomatology is not a necessary part of "normal aging", but rather represents a condition that may be circumvented if older adults are able to adaptively manage their

age-related losses and stressors.

Together, these findings suggest a mutually detrimental relationship between physical health decline and poor psychological well-being. Most evident in the meta-analysis by Lenze et al. (2001) was the synchronicity of change between physical illness and depressive symptoms. A loss of physical resources and the onset of chronic diseases can lead to an overall decline in health and quality of life. Low psychological well-being, in turn, can lead to adverse motivational, behavioural, and biological consequences, thus contributing to increased health problems and subsequent mortality in this population (e.g., Bruce et al., 1994; Penninx, Deeg, van Eijk, Beekman, & Guralnik, 2000). This reciprocal relationship may set in motion a downward spiral, characterized by physical health problems, poor subjective well-being, and subsequent health declines (Schulz, Martire, Beach, & Scheier, 2000; Wrosch et al., 2004, 2006).

The Management of Physical Health Challenges

Given the associations between health and mood, it is important to identify moderators in the relationship between acute physical symptoms and psychological well-being to further prevent the onset of the downward spiral and its associated detrimental consequences. Prior to the last decade, the majority of health care professionals viewed negative affect in older adults as a normative phase of the aging process and, thus, unrelated to declines in older adults' health. Despite the current empirical evidence supporting the mutual relationship between health and negative affect, there is, even now, a paucity of studies that examine exactly how it may be prevented (Bruce, 2000). Thus, it is crucial that current research aims to identify factors that can counteract the negative consequences of these stressors, thereby helping older adults maintain a high quality of

life. In this way, research should examine ways in which older adults may adaptively manage their health challenges, as well as the negative consequences that may stem from constraints they impose upon their lives. Specifically, as acute physical symptoms represent a detrimental, but potentially manageable, consequence of physical illness, research focusing on the management of these symptoms may identify one viable pathway through which this downward spiral can be prevented.

Perceived Control, Goal Attainment, & Adaptive Self-Regulation

One of the most critical ways in which physical illness may contribute to psychological distress is through the constraints placed on attaining daily ambitions and life goals. Goals constitute personally-relevant expectations for the future that can guide one's behaviour and choices, and include both long- (e.g., saving up for a vacation) and short-term (e.g., mowing the lawn) aspirations (Carver & Scheier, 1990; Emmons, 1986). Individuals' goal strivings play an important role in the choices they make, and which pathways they choose to follow (Brandstädter, 1984). Goals add structure and meaning to one's life, and making progress towards personal goals has been shown to contribute to subjective well-being (Wiese & Freund, 2005), life satisfaction (Brunstein, 1993; Emmons, 1986), and happiness (Michalos, 1985). For example, Zuzanek and Box (1988) found that it was not the amount of time available for the pursuit of leisure activities that was predictive of happiness in retirees, as it was the meaningfulness, structure, and feelings of accomplishment that these activities provided that contributed to psychological well-being. In addition, the pursuit of goals contributes to individuals' quality of life, as they may provide a sense of purpose, motivation, and control. Importantly, the process of pursuing goals occurs across the entire life-span, with some

research suggesting that older adults may even be more actively engaged in goal pursuit than younger adults (Riediger, Freund, & Baltes, 2005).

Throughout the life-span, individuals strive to achieve goals by exerting control over their behaviour in order to accommodate future outcomes. The life-span theory of control emphasizes that individuals are motivated throughout the life-span by a need to produce behaviour-event contingencies to exert control over their environment (Heckhausen & Schulz, 1995; White, 1959). Psychological well-being, life satisfaction, and self-esteem are all dependent, in part, on individuals' perceptions of control over their lives and their futures (Brandtstädter & Rothermund, 2002). A perceived loss of control over personal goals and other life domains has been seen as a major risk factor for depression (Abramson & Martin, 1981; Brandtstädter & Rothermund; see Coyne, 1992). In the face of developmental constraints, such as the onset of physical illness, feelings of depression and helplessness may arise when individuals feel that they have insufficient control over attaining personally-relevant goals, or that their aspirations are beyond the scope of their shifting resources (Bandura, 1982, 1989; Pyszczynski & Greenberg, 1992). In addition, perceived control across the life-span is a vital part for the maintenance of optimism (Brandtstädter, 1989), and may influence older adults' motivation to cope with their developmental losses (Brandtstädter & Rothermund).

Control processes are particularly important in facilitating the attainment of goals, thereby providing an individual with a sense of mastery, fulfillment, and control over their environment. In this way, different types of control processes may be adaptive when faced with challenged goal progress. Brandtstädter and Rothermund (2002) propose a dual-process model, in which two control processes are negotiated in order to manage the

discrepancy between actual and desired states. Assimilation involves an active intervention in which an individual attempts to adapt their situation to facilitate the attainment of a goal by investing time and energy into achieving their desired end-state. However, assimilation processes may be limited by the availability of the action resources of the individual. For example, an individual who suffers from a physical illness may no longer have the resources to reach important life goals. Thus, when assimilative processes become taxing and are no longer rewarding, individuals must shift their attention and efforts towards another important facet of control processes, accommodation. Accommodation processes involve the rescaling of aspirations, the minimization of the value of an unattainable goal, and the focusing of energy towards other important life goals and domains. Accommodation involves processes aimed towards adjusting goals and projects to fit with the available action resources of the individual, and to protect the individual from the potential negative impact of goal failings by downgrading or de-emphasizing goals. This process enables an individual to maintain a sense of control over their lives and the outcomes of their actions.

Baltes and Baltes (1990) proposed a model of selective optimization with compensation (SOC) to account for older adults' resilience to common age-related challenges. In their model, strategies of selection, optimization, and compensation are outlined as aiding individuals in maximizing their ability to achieve desired outcomes, while at the same time, minimizing deleterious outcomes. This model attempts to explain successful aging in the face of inevitable developmental challenges and losses through these three processes which help individuals choose which goals to pursue and where to allocate their available resources. While selective processes involve deciding which goals

to pursue, optimization focuses on acquiring or applying one's available resources to pursue these goals. In addition, individuals rely on compensatory processes which involve the use of additional resources in order to maintain functioning when faced with a loss or deterioration of available resources (Baltes & Carstensen, 1996). Successful use of the strategies outlined in the SOC-model help older adults maintain psychological well-being by selectively pursuing goals that match their available resources, which may require a withdrawal of effort towards goals that are no longer attainable. By freeing up resources that were committed to the pursuit of goals that may no longer be realistic in the face of age-related challenges, older adults can optimize their progression towards other meaningful life pursuits, thus helping them to maintain their overall quality of life. In addition, research has evidenced confirmation of the adaptive value of this model, with studies showing that individuals who report utilizing SOC-strategies as experiencing better subjective and emotional well-being, and less feelings of loneliness (Freund & Baltes, 1998).

Schulz and Heckhausen (1996; Heckhausen & Schulz, 1993, 1995) proposed a life-span theory of control in which individuals attempt to actively control their environment and adapt to experiences of failure. Embedded within this theoretical framework is the conceptualization of control as involving two processes. Primary control involves the individual actively attempting to change the environment around them in order to meet their needs (e.g., investing time and energy), whereas secondary control involves individuals' internal focus in realigning themselves with their environment (e.g., goal disengagement) (Rothbaum, Weisz, & Sneider, 1982). While the potential for primary control decreases in old age (Heckhausen & Schulz, 1995),

individuals continue to strive for maintaining primary control over their lives, despite age-related challenges. Secondary control processes are motivated by individuals' desires to maintain primary control over their environments, and thus increase throughout later adulthood in order to compensate for developmental losses that make the pursuit of certain goals unrealistic. In this way, primary control strategies should be utilized when individuals face favourable opportunities to attain a goal, while secondary control strategies should be engaged in when goal attainment becomes unlikely.

Active Engagement in Overcoming Health Challenges

Historically, research has emphasized the primacy of the active engagement of goal pursuits over other processes, such as disengagement, as researchers have viewed goal persistence as a superior coping mechanism when faced with obstacles to desired goals (Brandtstädter & Rothermund, 1994, 2002). Indeed, recent research has examined active control processes as one possible buffering mechanism between older adults' health challenges and poor psychological well-being. Specifically, actively engaging in overcoming physical health problems that can be overcome (*health engagement control strategies*, or *HECS*) has been shown to moderate the effects of certain health problems on depression in this population (e.g., Wrosch et al., 2002; Wrosch, Schulz, et al., in press) by allowing older adults to maintain a sense of control over their lives. That is, for those older adults who are confronted with manageable health-related challenges, actively investing time and energy (*selective primary control*), seeking the advice or help from others (*compensatory primary control*), and increasing motivation (*selective secondary control*) regarding the achievement of attainable health-related goals can help to overcome these symptoms and avoid the resultant depressive symptomatology.

Wrosch, Schulz, & Heckhausen (2002) examined the adaptive value of HECS in a sample of elderly caregivers. The researchers found that HECS moderated the relationship between acute physical symptoms and depressive mood, and contributed to a lower level of depression over an approximate one-year time period. Additionally, a recent study conducted by Wrosch, Schulz, and colleagues (in press) examined whether HECS could buffer the relationship between acute physical problems, depressive mood, and cortisol dysregulation in a community sample of older adults. Elevated levels of depressive symptoms and cortisol were found among those older adults who experienced high levels of physical health problems but low levels of HECS. On the other hand, those older adults who experienced high levels of physical health problems but who were actively engaged in overcoming these challenges, experienced lower levels of depressive symptomatology and more adaptive levels of cortisol secretion.

Physical Illness & Goal Adjustment Capacities

Although active engagement may be beneficial for overcoming health challenges that can potentially be overcome, there are other consequences that stem from acute physical symptoms. Specifically, constraints on the pursuit of life goals and daily activities may occur on a daily basis, and contribute to negative emotions.

While it has been proposed that progress towards specific goals that are congruent to an individual's intrinsic organismic needs (e.g., autonomy) will have a significant positive impact upon their well-being (Sheldon & Kasser, 1995, 1998), the pursuit of goals that have become unattainable can threaten a person's perception of control. Goal theorists postulate that making progress towards goals will enhance individuals' subjective well-being, while failure to achieve goals will detriment well-being (Diener &

Lucas, 2000). As opportunities to realize specific goals change across the life-span, individuals must be able to adapt to these changes in opportunities in order to maintain a sense of well-being. The pursuit of goals that have become difficult or impossible to attain due to age-related challenges, such as certain health goals, may result in feelings of dissatisfaction, frustration, and loss of control, and the repeated failure experiences may cause distress and detrimentally impact a person's sense of well-being (Carver & Scheier, 1990; Emmons, 1986). In the same vein, impediments in the progression towards goals can have negative affective consequences, such as depressive symptoms and anxiety, thus making goals that have become unattainable a major risk factor for subsequent poor quality of life. From this perspective, psychological well-being can be maintained when individuals reduce the discrepancy between actual and desired states (Carver & Scheier, 1990; Sheldon & Kasser, 1998).

As such, it is important to study how constraints on daily progress towards goals can contribute to negative mood. Indeed, subjective well-being is dependent upon the extent to which an individual's resources (i.e., the abilities and skills that help individuals reach their goals) match their desired goals (Diener & Lucas, 2000), and a loss of physical resources has been shown to be a strong predictor of depression (e.g., Turner & Noh, 1988). For example, the experience of acute levels of pain may prevent an individual from accomplishing their daily goal of mowing the lawn, or of attending the opera with a friend, and if these constraints are not adaptively managed they may provide a source of emotional distress that stem from physical health problems.

Research focusing on adaptive self-regulation has emphasized the importance of active coping processes that facilitate goal attainment, and has shown that persistence

towards one's goals, as well as associated processes (e.g., self-efficacy, optimism), contribute to a person's quality of life (e.g., Bandura, 1982; Holahan, 1988; Scheier et al., 1989). However, in the face of health challenges, some goals may no longer be attainable, and therefore, persistence may no longer be beneficial as it can contribute to repeated failure attempts and threaten an individual's perception of control over their environment. Dissatisfaction with life may result when an individual is faced with unattainable goals, especially if they continue to commit their time and effort towards them.

According to theories of control, depression, hopelessness, and worthlessness may arise when a person remains strongly committed to the attainment of an unfeasible goal unless they shift their focus to accommodate for such goal failures (Brandtstädter & Renner, 1990; Brandtstädter & Rothermund, 1994, 2002). Certain goals are thought to be more beneficial to life satisfaction and well-being than others, and Cantor and Sanderson (1999) suggest that goals should be appropriate to an individual's life-stage and, subsequently, be feasible to be facilitated in daily life. In this way, older adults may have to shift their goal strivings to more age-appropriate goals as they confront age-related challenges, such as physical illness. For example, an older adult suffering from back pain may have to shift their goal of running every day to a goal more appropriate for their physical constraints, such as taking daily walks.

According to Brandtstädter and Rothermund (2002), an adaptive flexibility is necessary to shift from assimilative to accommodative processes when insurmountable challenges or unexpected situations arise that impede goal attainment. A shift from assimilative to accommodative processes may involve the disengagement and withdrawal from barren commitments and unattainable goals, and support the development and

pursuit of other important goals. In this way, older adults may have to repeatedly shift their goals in order to facilitate these constraints in their lives and to avoid the negative consequences associated with a lack of progress towards goals, or goal failure.

Importantly, research has found that older adults evidence a shift from assimilation to accommodation tendencies, as there is increased reliance on accommodative processes due to age-related constraints on resources (e.g., health) that become more frequent in later years (Brandtstädter & Renner, 1990; Heckhausen & Schulz, 1995). In particular, goal adjustment capacities can help older adults maintain a sense of control over their lives by enabling them to shift their goals to more realistic and attainable aspirations that will diminish the likelihood of experiencing repeated failure attempts from pursuing goals that have become unattainable.

Based on a proposed model of goal adjustment (Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, et al., 2003; Wrosch, Miller, Scheier, & Brun de Pontet, in press), one process involved in the adaptive self-regulation of unattainable goals is goal disengagement. Goal disengagement includes the ability of an individual to “let go” of goals that are no longer attainable, and a withdrawal of effort and psychological commitment from the goal, and an inability to disengage from unattainable goals can lead to psychological distress. For example, clinical evidence implicates a poor capacity to disengage from barren commitments as a major contributor to reactive depression, as well as to the strength and length of depressive episodes (see Brandtstädter & Rothermund, 2002). By disengaging from an unattainable goal, an individual may circumvent the negative emotions associated with repeated failure experiences, such as helplessness and depression. In addition, disengaging from barren pursuits frees up an

individual's available resources, which can then be turned towards other meaningful life pursuits. This investment of resources towards alternate tasks can compensate for the negative consequences of goal failure, and allow individuals to maintain meaning and feelings of self-efficacy in their lives.

Another process involved in the adjustment of unattainable goals is goal reengagement (Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, et al., 2003; Wrosch et al., 2006). Goal reengagement is an individual's ability to identify, pursue and undertake new, attainable goals. Having self-relevant goals contributes to life satisfaction, self-esteem, and positive affect (Diener & Lucas, 2000; Pomerantz, Saxon, & Oishi, 2000), and, in this way, goal reengagement allows the individual to maintain a sense of purpose in their life (Scheier et al., 2006; Wrosch, Scheier, Miller, et al.). As the pursuit and accomplishment of goals comprise a central tenet of one's self-concept, it is imperative that alternate pathways be pursued in the face of challenged goal attainment. In addition, the turning of one's attention to other important goals may help individuals' disengagement from barren commitments, as the availability of alternative pursuits can facilitate the disengagement process (e.g., Aspinwall & Richter, 1999). Importantly, reengaging in alternative goals may help individuals maintain a sense of well-being, as they may more easily avoid thoughts pertaining to their failed goal attempts. For example, Klinger (1975) suggests that reengagement can help alleviate symptoms of depression that have arisen due to the experience of goal unattainment.

In the context of physical illness, acute physical symptoms may constrain individuals' daily progress towards goals, or fulfillment of accomplishing a daily goal, and thus contribute to psychological distress. However, if a person is able to adaptively

manage these constraints by disengaging from the goal and focusing their efforts on another goal, this psychological distress may be circumvented. For example, an older adult who is unable to attend the opera with her friend due to acute physical pain, may experience less psychological distress if she decides to *disengage* from the goal of attending the opera. In addition, the elderly woman who disengages from attending the opera may avoid the concomitant negative emotions if she also decides to *reengage* in an alternative goal of having her friend over to listen to the opera on her stereo at home. Thus, active engagement may not always be the most beneficial choice in the management of physical health constraints on daily activities and goals. Instead, a flexibility in the pursuit of goals may also be adaptive. Accordingly, active engagement should be directed more towards overcoming the health challenge, while goal adjustment should be aimed at dealing with unattainable goals. In this regard, the capacity of an individual to adjust their goals in the face of health challenges may buffer the impact of acute physical symptoms on psychological distress.

Research has examined the role of goal adjustment capacities in relation to younger and older adults, and in populations confronting specific stressors (e.g., parents of children with cancer; Wrosch, Scheier, Miller, et al., 2003), and has found promising results. For example, goal disengagement has been shown to contribute to higher subjective well-being in populations facing constraints that require a shift in personal goals, such as among individuals who have developed AIDS (Moskowitz, Folkman, Collette, & Vittinghoff, 1996), who have been separated from a partner later in life (Wrosch & Heckhausen, 1999), and in women who have passed the developmental deadline for childbirth (Heckhausen, Wrosch, & Fleeson, 2001).

In a sample of undergraduate students, Wrosch, Scheier, Miller and colleagues (2003) examined the role of goal disengagement and goal reengagement in four separate domains of subjective well-being (perceived stress, intrusive thoughts, self-mastery, and purpose of life). Students were asked to think of five specific life goals that they had been unable to achieve, and to respond to a questionnaire regarding their subjective well-being and goal adjustment capacities. The researchers found that both goal adjustment capacities uniquely contributed to a higher level of self-mastery, and lower levels of perceived stress and intrusive thoughts. Interestingly, goal disengagement and goal reengagement showed a significant interaction effect in the self-mastery and perceived stress domains. That is, failure to disengage was associated with reduced levels of subjective well-being among people who were not able to find new goals.

In a second study, Wrosch Scheier, Miller et al. (2003) examined the impact of goal adjustment capacities on emotional well-being in both younger and older adults. Among older adults, it was found that the ability to disengage from unattainable goals had a positive impact on emotional well-being if participants had a high capacity to reengage in, or turn their efforts towards, other important meaningful life pursuits. Additionally, it was found that older adults possessed superior goal adjustment capacities as compared to younger adults, indicating that goal adjustment may be a particularly valuable skill in the older population, given the reduced opportunities to overcome goal constraints in later life.

Although more research is needed to investigate the specific nature of goal adjustment capacities in maintaining global well-being in older adults facing physical challenges, results thus far have indicated that these self-regulatory capacities can have a

positive effect on subjective well-being. Thus, goal adjustment capacities may represent one important pathway through which older adults can maintain quality of life despite confronting acute health challenges, above and beyond the influence of active coping.

The Present Study

Research focusing on aging and health has explored the relationship between physical illness and psychological well-being in the context of functional disabilities and acute physical symptoms in both community and clinical samples using cross-sectional and longitudinal designs. Although studies have empirically validated this relationship, much investigation is still needed into the specific pathways through which this relationship emerges. In addition, although empirical support for self-regulatory capacities has evidenced promising results, research in this domain has focused solely on cross-sectional data or longitudinal data over an extended time period. Missing from the empirical data are the short-term relations between acute physical symptoms and negative affect in older adults. As acute physical symptoms represent frequently experienced health challenges of older adults that may contribute to psychological distress, it is imperative to investigate ways in which older adults can manage these daily constraints and thus hinder the resultant development of negative emotions. By determining ways that older adults can avoid the negative emotions caused by acute physical symptoms, it may be possible to prevent the development of depressive symptoms in older adults that may subsequently lead to the downward spiral involving further health decline and mortality. Thus, a longitudinal study investigating this relationship across days is necessary to examine the specific effects of acute physical symptoms on negative emotions, and the adaptive mechanisms that may be employed to buffer this relationship.

Accordingly, this study proposed to examine the relationship between health and well-being through the assessment of the immediate association and change in older adults' acute physical symptoms and negative emotions across three non-consecutive normal days. By examining the short-term interaction of these variables, a more refined understanding of the consequences that may contribute to the aforementioned downward spiral could be achieved. In addition, by assessing participants' goal adjustment capacities, this study also aimed to determine if goal disengagement and goal reengagement may act as protective mechanisms in the association between acute physical symptoms and negative affect. Furthermore, by taking measures across days, the specific adaptive nature of these goal adjustment capacities could be explored, and one possible way in which older adults can manage their physical health problems to improve their overall quality of life could be identified.

Hypotheses

Hypothesis #1: Acute Physical Symptoms and Negative Affect

Given the consequences of acute physical symptoms on daily activities, and congruent with previous research, a positive association between acute physical symptoms and negative affect was expected, both cross-sectionally and for change across days (see Figure 1). Specifically, experiencing elevated levels of acute physical symptoms at Time 1 (T1) was expected to contribute to higher levels of same-day negative affect, and an increase in negative emotions across days. Furthermore, to progress research in disentangling the effects of acute physical symptoms and functional disabilities, it was expected that acute physical symptoms would uniquely contribute to same-day and change in negative affect above and beyond the impact of functional

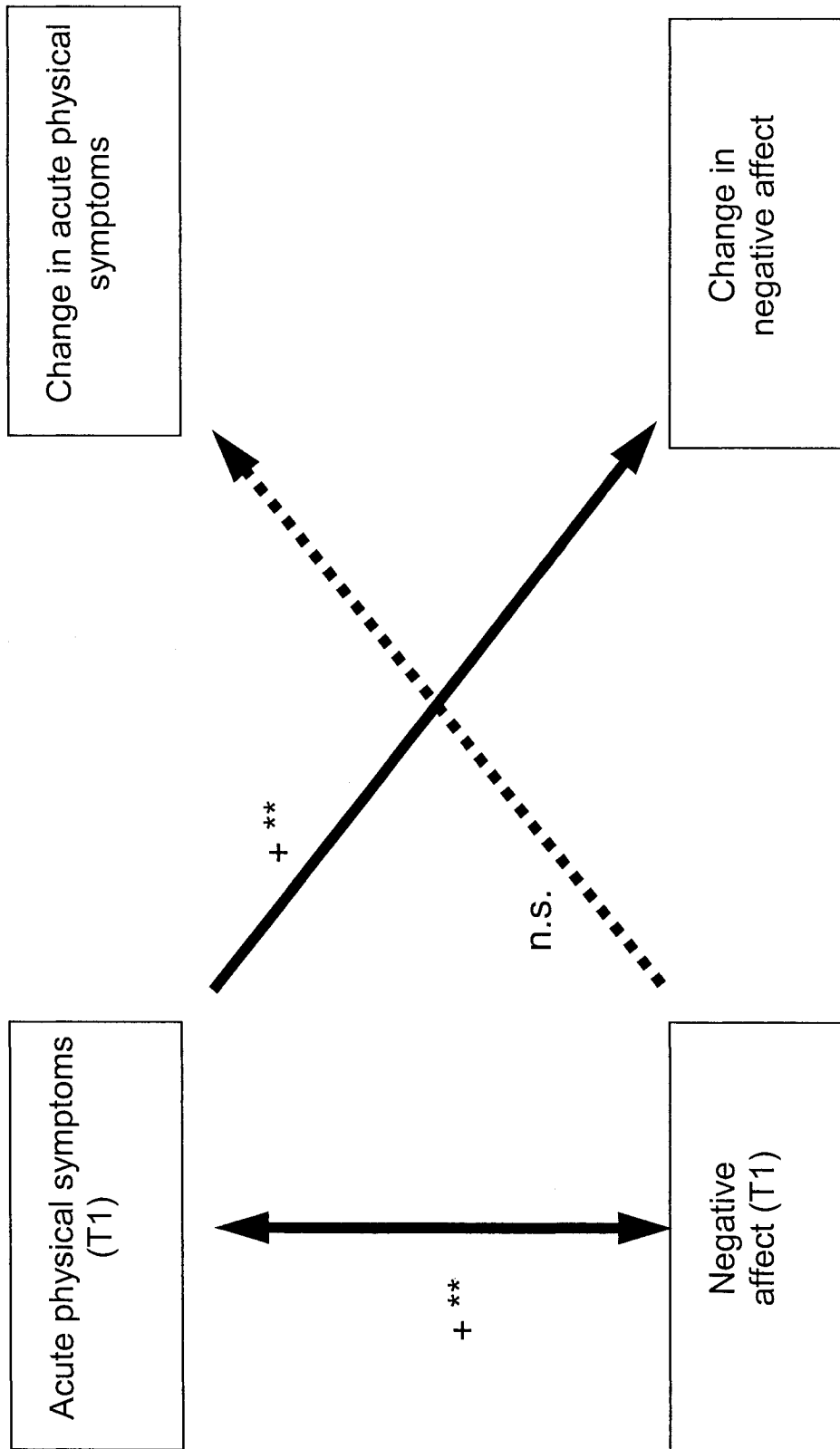


Figure 1. Hypothesized relationships between acute physical symptoms and negative affect across days.

limitations by controlling in subsequent analyses for participants' level of functional disabilities.

In contrast to the impact of acute physical symptoms on negative affect, based on previous research suggesting that a prolonged time is needed for psychological distress to impact physical health, negative affect was expected to be unrelated to change in acute physical symptoms across days. Furthermore, all expected results were anticipated when controlling for participants' age, sex, and socioeconomic status.

Hypothesis #2: Goal Adjustment Capacities

Specific hypotheses about goal adjustment capacities' impact on negative affect were also tested in this study (see Figure 2). Based on previous research on the buffering effect of goal adjustment capacities between stressors and well-being, it was expected that both goal disengagement and goal reengagement would moderate the relationship between acute physical symptoms and negative affect. Specifically, for those older adults experiencing acute physical symptoms, goal adjustment capacity was expected to provide a significant buffer between the experience of these symptoms and negative affect. Therefore, significant interactions between goal disengagement capacity and acute physical symptoms, and goal reengagement capacity and acute physical symptoms were expected for same-day measures, as well as for change in negative affect across days. Additionally, based on previous research citing the adaptive benefits of the synchronicity of goal disengagement and goal reengagement, this study sought to explore the interactional relationship between both goal adjustment capacities in moderating the relationship between acute physical symptoms and same-day negative affect, as well as on change in negative emotions across days. Importantly, goal adjustment capacities were

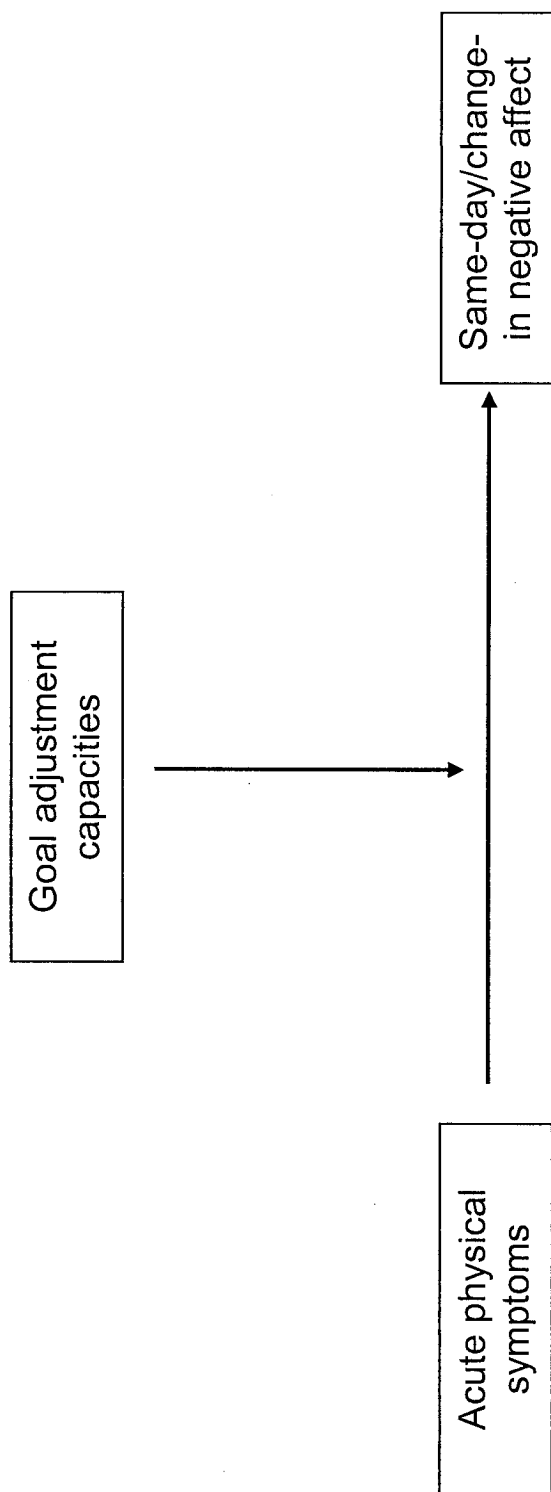


Figure 2. Hypothesized moderating role of goal adjustment capacities in the relationship between acute physical symptoms and same-day and change in negative affect.

expected to provide beneficial effects to older adults' well-being above and beyond the effects of active coping, and were thus expected to remain significant when controlling for participants' reported levels of health engagement control strategies.

Method

Participants

This study included a heterogeneous, community-based sample of 215 older adults between the ages of 63 and 94 ($M = 72.41$, $SD = 5.91$). Participants were recruited from the Montreal metropolitan area, and had taken part in the first wave of the larger Montreal Aging and Health Study in 2004. Forty-eight percent of the sample was male. In addition, 32% of participants had attained an undergraduate university degree or higher, and 57% had annual incomes of less than \$34,000. Thirteen participants were excluded from the study because they had missing data pertaining to negative affect or acute physical symptoms across all three days of data collection.

Procedure

The sample was recruited through advertisements in local newspapers. Interested participants contacted the laboratory to set up an initial appointment with a research assistant. This appointment took place in either the laboratory or, if participants were unable to visit the laboratory, in participants' homes. During this first interview, participants were informed on the study's purpose, signed a consent form (see Appendix A), and were given instructions and asked to respond to a baseline questionnaire. Participants were also given and instructed to respond to a short questionnaire each evening in their homes over the course of three non-consecutive normal days. These three days were determined during the initial interview, and were spaced with an intermediating day in between each day of data collection. After finishing the study, participants contacted the laboratory and the research assistant collected all materials from their homes. Upon receipt of all study materials, participants received \$50 for taking

part in the study.

Materials

The questionnaires include measures of acute physical symptoms, negative affect, goal adjustment capacities, sociodemographic variables, functional disabilities, and health engagement control strategies (HECS). Table 1 represents the means and standard deviations of the main study variables. The zero-order correlations amongst the study's variables are indicated in Table 2.

Acute physical symptoms. Self-report measures of participants' acute physical symptoms were taken over three non-consecutive normal days. At the end of each day, participants completed a short questionnaire and indicated whether or not they had experienced 12 physical symptoms throughout the course of the day (see Appendix B). This list of symptoms was derived from the PRIME-MD patient questionnaire screener (Spitzer et al., 1994) and included acute physical symptoms associated with the digestive (e.g., "constipation, loose bowels, or diarrhea") and respiratory tracts (e.g., "shortness of breath"), cardiology (e.g., "chest pain"), sexual intercourse (e.g., "pain or problems during sexual intercourse"), encephalic problems (e.g., "dizziness"), and various indicators of pain (e.g., "back pain"). To obtain indicators of daily physical symptoms, a count variable comprised of the total number of symptoms participants experienced was computed separately for each of the three days ($M_{T1} = .89$, $SD_{T1} = 1.12$; $M_{T2} = .88$, $SD_{T2} = 1.20$; $M_{T3} = .81$, $SD_{T3} = 1.26$). The measures of acute physical symptoms collected on all three days were significantly correlated with each other (all $r_s = .65$ to $.71$; all $p_s < .01$). To create a variable that would represent change in acute physical symptoms across days, an estimated linear regression model was calculated for each participant separately,

Table 1.

Means and Standard Deviations of Main Study Variables

Variables	Mean	Standard Deviation	Range
Acute Physical Symptoms (T1)	.89	1.12	0-6
Acute Physical Symptoms (T2)	.88	1.20	0-5
Acute Physical Symptoms (T3)	.81	1.26	0-8
Negative Affect (T1)	1.94	3.43	0-24
Negative Affect (T2)	1.80	3.40	0-22
Negative Affect (T3)	1.77	3.16	0-17
Goal Disengagement	3.01	.74	1-5
Goal Reengagement	3.73	.63	1-5

Table 2.

Zero-Order Correlations Among All Study Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Acute physical symptoms (T1)	1.00												
(2) Acute physical symptoms (T2)	.71**	1.00											
(3) Acute physical symptoms (T3)	.65**	.66**	1.00										
(4) Negative affect (T1)	.24**	.18*	.13	1.00									
(5) Negative affect (T2)	.31**	.35**	.26**	.54**	1.00								
(6) Negative affect (T3)	.44**	.41**	.30**	.53**	.62**	1.00							
(7) Goal disengagement	-.02	-.10	-.01	-.10	-.20**	-.16*	1.00						
(8) Goal reengagement	-.22	-.18*	-.25**	-.04	-.20**	-.14*	.07	1.00					
(9) Age	-.02	-.03	.02	.05	.04	-.03	-.02	-.08	1.00				
(10) Sex ^a	.15*	.09	.18*	.00	.03	.03	.00	.05	.00	1.00			
(11) SES	-.22**	-.15*	-.15*	-.18*	-.15*	-.18*	.05	.15*	-.09	-.14*	1.00		
(12) Functional disabilities	.30**	.17*	.33**	.15*	.22**	.19**	-.04	-.18*	.10	.17*	-.13	1.00	
(13) HECS	-.08	.01	-.10	-.13	-.28**	-.19**	.02	.41**	.04	-.12	.05	-.14*	1.00

Note. ** $p \leq .01$. * $p \leq .05$; ^aSex was coded as 1 = male and 2 = female.

in which day was regressed upon levels of acute physical symptoms ($M = -.04$, $SD = .50$). A positive value indicated an increase in acute physical symptoms across the three days, whereas a negative value indicated a decrease in acute physical symptoms across the three days.

Negative affect. Self-reported negative affect was assessed across the same three non-consecutive normal days as acute physical symptoms. At the end of each day, participants were asked to rate the extent to which they had experienced nine different negative emotions throughout the day on 5-point Likert-type scales (0 = very slightly or not at all, to 4 = extremely) (see Appendix C). Sample items included the emotions lonely, sad, isolated, angry, and stressed. An index of participants' negative affect was computed by summing the scores of participants' experienced negative emotions on each of the three days ($M_{T1} = 1.94$, $SD_{T1} = 3.43$; $M_{T2} = 1.80$, $SD_{T2} = 3.40$; $M_{T3} = 1.77$, $SD_{T3} = 3.16$). For each day, the negative affect scales showed good internal consistencies (α s = .85, .84, .82, respectively), and the single day measures of negative affect were significantly correlated with each other (all r s = .53 to .62; all p s < .01). To create a variable that would represent change in negative emotions across days, an estimated linear regression model was calculated for each participant separately, in which day was regressed upon levels of negative emotions ($M = -.09$, $SD = 1.61$). A positive value for this measure indicated an increase in negative emotions across the three days, while a negative value was indicative of a decrease in negative emotions across the three days.

Goal adjustment capacities. Included in the baseline questionnaire were two goal adjustment subscales that assessed participants' capacities to disengage from unattainable goals and to reengage in new goals when unattainable goals are encountered (Wrosch,

Scheier, Miller, et al., 2003; Wrosch, Miller, et al., in press) (see Appendix D). To obtain an index of individual differences in goal adjustment capacities, participants were asked to rate their agreement with ten statements regarding how they usually react when facing an unattainable goal. Their agreement with these statements was rated on 5-point Likert-type scales (1 = strongly disagree, to 5 = strongly agree), with four statements representing goal disengagement capacities, and six statements representing goal reengagement capacities.

Participants possessed a high capacity to disengage from unattainable goals if they reported that they found it easy to reduce commitment and effort towards that goal. Sample items included “It’s easy for me to stop thinking about the goal and let it go”, and “I find it difficult to stop trying to achieve the goal”. Two negatively formulated items were reverse coded prior to scale computation, and a mean score representing an index of participants’ capacities to disengage from unattainable goals was computed from the four items ($M = 3.01$, $SD = .74$, $\alpha = .61$), with higher scores indicating higher goal disengagement capacities.

Goal reengagement was measured with six positively formulated items. Participants were asked to report whether they found it easy to identify (two items), commit to (two items), and pursue (two items) new goals when faced with an unattainable goal. Sample items included “I think about other new goals to pursue”, and “I seek other meaningful goals”. A mean score representing participants’ capacities to reengage in new goals was calculated from all six items ($M = 3.73$, $SD = .63$, $\alpha = .88$). Participants possessed high goal reengagement capacities if they obtained high scores on this scale. Goal reengagement capacities were not significantly correlated with goal

disengagement capacities ($r = .07$; $p > .10$).

Control variables. The baseline questionnaire also included measures of participants' sociodemographic factors, functional disabilities, and health engagement control strategies, as these factors have been shown to be related to the main study variables. Sociodemographic variables included participant age, sex, and socioeconomic status (SES) (see Appendix E). To create a measure that represented participants' overall SES, three variables were included: 1) education level (0 = no education, 1 = high school, 2 = collegial or trade school, 3 = bachelor's degree, 4 = masters or doctorate; $M = 2.06$, $SD = 1.03$); 2) annual family income (0 = less than \$17,000, 1 = up to \$34,000, 2 = up to \$51,000, 3 = up to \$68,000, 4 = up to \$85,000, 5 = more than \$85,000; $M = 1.49$, $SD = 1.30$); and 3) perceived socioeconomic status (measured using a 10-rung SES ladder on which participants were asked to rate their socioeconomic status relative to others in their society, as described by Adler, Epel, Castellazzo, & Ickovics, 2000; $M = 6.17$, $SD = 1.77$). These three variables were standardized and averaged to create a more global measure of participants' SES ($M = -.01$, $SD = .81$, $\alpha = .72$).

Participants' functional disabilities were also used as a control in the analyses (see Appendix F). Functional disabilities were assessed in the baseline questionnaire, and included a measure of difficulty with six activities of daily living (eating, dressing, bathing, using the toilet, walking around the home, and getting in or out of bed or a chair), and six instrumental activities of daily living (performing heavy housework, performing light housework, shopping, preparing meals, managing money, and using the telephone). A count variable comprised of the total number of difficulties participants experienced in these activities was computed for use in the analyses. Seventy-six percent

of participants experienced no functional disabilities, while 14% reported experiencing one disability, 5% reported two disabilities, and 3% reported three disabilities ($M = .45$, $SD = 1.07$).

A measure of participants' health engagement control strategies also served as a control variable in the analyses, and was assessed in the baseline questionnaire (see Appendix G). This measure included nine items assessing the extent to which participants engage in three types of control strategies pertaining to health-related goals (Wrosch et al., 2002; Wrosch, Schulz, et al., in press). These control strategies included compensatory primary control (e.g., "If I develop a new health problem, I immediately get help from a health professional"), selective primary control (e.g., "I do whatever is necessary to be as healthy as I possibly can be"), and selective secondary control (e.g., "I often think about how important good health is to me"), and were each assessed by three items. Participants rated the extent to which each statement usually applied to them on 5-point Likert-type scales (0 = almost never true, to 4 = almost always true). As previous research has indicated that these items form a single construct among older adults (Wrosch et al., 2002), a mean score using all nine items was computed ($M = 3.12$, $SD = .67$, $\alpha = .88$).

Results

The results are divided into three sections. The first section includes descriptive data pertaining to the types of acute physical symptoms participants experienced, as well as the zero-order associations between the study's variables, and the observed changes in measures across the three days. The second section considers the predictive value of acute physical symptoms on same-day and change in negative affect, and the impact of negative emotions on same-day and change in acute physical symptoms. The third section explores the adaptive value of goal adjustment capacities in buffering the relationship between acute physical symptoms and subsequent negative affect.

Descriptive Data

Types of acute physical symptoms. Table 3 provides information pertaining to the differences in the distribution of the 12 acute physical symptoms across all three days. As shown in Table 3, the most frequently reported symptoms across the three days were arm, leg, and joint pain (28%), back pain (15%), and nausea, gas, and indigestion (9%), respectively. The least frequently reported physical symptoms across the three days were fainting spells (0.3%), pain or problems during sexual intercourse (1%), and stomach pain (2%), respectively.

To determine whether the frequency of reported acute physical symptoms differed across days, a 3 X 3 repeated measures analysis of variance (ANOVA) was conducted with days as the within-subjects factor. Similarly, to examine the mean level stability of reported negative emotions across days, a 3 X 3 repeated measures ANOVA was conducted, with days as the within-subjects factor. The results of the ANOVAs revealed that neither levels of acute physical symptoms, $F(2, 200) = .780, p > .10$, nor levels of

Table 3.

Distribution of Acute Physical Symptoms Experienced by Participants Across Days

Acute Physical Symptom	Day 1		Day 2		Day 3		Mean	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Stomach pain	3	1.5	3	1.5	7	3.5	4.3	2.2
Back Pain	27	13.4	34	16.8	28	13.9	29.7	14.7
Pain in arm, legs, joints	58	28.7	59	29.2	51	25.2	56.0	27.7
Pain or problems during sexual intercourse	1	0.5	1	0.5	1	0.5	1.0	0.5
Headaches	16	7.9	9	4.5	11	5.4	12.0	5.9
Chest pain	3	1.5	7	3.5	6	3.0	5.3	2.7
Dizziness	4	2.0	4	2.0	10	5.0	6.0	3.0
Fainting spells	0	0.0	0	0.0	2	1.0	0.7	0.3
Feeling heart pound/race	5	2.5	7	3.5	5	2.5	5.7	2.8
Shortness of breath	18	8.9	16	7.9	13	6.4	15.7	7.7
Constipation, loose bowels, diarrhea	23	11.4	17	8.4	15	7.4	18.3	9.1
Nausea, gas, indigestion	22	10.9	21	10.4	14	6.9	19.0	9.4

negative affect, $F(2, 200) = .294, p > .10$, differed significantly across days.

Correlational findings. Table 2 presents the zero-order correlations found among the study's variables. With respect to the sociodemographic variables, the correlation analysis revealed that women reported significantly more acute physical symptoms than men at T1 and T3 only. In addition, as compared to higher SES participants, lower SES participants reported significantly higher levels of acute physical symptoms and negative emotions across all three days. By contrast, higher SES participants reported a greater capacity to reengage in new goals than lower SES participants. Age was unrelated to any of the study's main variables.

In concordance with previous research, functional disabilities were significantly associated with negative affect across all three days. The greater the number of functional disabilities participants experienced, the greater the number of negative emotions. In addition, demonstrating the overlap between functional disabilities and acute physical symptoms, a significant correlation was found between these two measures. However, the moderate strength of this association (all r s = .17 to .33) also suggests that these two constructs represent two distinctive aspects of physical illness that may contribute to negative emotions in unique ways.

In preliminary support of the hypotheses, correlational analyses also demonstrated functional relations between the main predictor and outcome variables. Levels of acute physical symptoms were positively associated with same-day levels of negative emotions. The higher the number of acute physical symptoms, the greater the negative emotions participants experienced. Acute physical symptoms at T1 were significantly correlated to negative affect across all three days. However, T1 negative affect was

significantly correlated with acute physical symptoms only at T1 and T2. Thus, although a higher number of initial acute physical symptoms was related to same and subsequent day levels of negative emotions, initial negative affect was not related to acute physical symptoms across all days. Furthermore, although no significant correlations between goal adjustment capacities and T1 negative affect were found, the associations between both goal adjustment capacities and T2 and T3 negative affect were significant. The higher the capacity of an individual to either disengage from unattainable goals or engage in alternate goals, the lower the experienced negative emotions.

Acute Physical Symptoms and Negative Affect

Predicting same-day negative affect. It was hypothesized that acute physical symptoms would predict same-day negative mood. To test this hypothesis, a regression analysis was performed in which negative affect at T1 was included as the dependent variable. Participants' levels of acute physical symptoms were centered and included in the regression analysis as the predictor variable.

The results of the analysis are presented in Table 4. In support of the hypothesis, acute physical symptoms significantly predicted same-day negative emotions, explaining 6% of the variance, $F(1, 200) = 12.56, R^2 = .06, \beta = .24, p < .01$. Participants who experienced elevated levels of acute physical symptoms at T1, also experienced a greater number of same-day negative emotions. The same pattern of results emerged when controlling for the sociodemographic variables of age, sex and SES, and for participants' functional disabilities. In this multivariate analysis, none of the control variables contributed to T1 negative affect, all $F_s(5, 196) < 3.50, R^2_s < .02, p_s > .06$, and acute physical symptoms still significantly predicted T1 negative affect, $F(5, 196) = 7.58, R^2 =$

Table 4.

Results from the Regression Analyses Predicting the Relationship Between Acute Physical Symptoms and Negative Affect

Predictors	NA (T1)		NA (Slope)		APS (Slope)	
	R ²	β	R ²	β	R ²	β
Negative affect (NA) (T1)	--	--	.37**	-.63**	.00	-.04
Acute physical symptoms (APS) (T1)	.06**	.24**	.09**	.31**	.08**	-.29**

Note. ** $p \leq .01$, * $p \leq .05$. All effects remained significant if controlled for age, sex, and SES. In addition, all results pertaining to acute physical symptoms as a predictor variable remained significant if controlled for functional disabilities.

.04, $\beta = .20$, $p < .01$.

Predicting change in negative affect. It was also hypothesized that the presence of acute physical symptoms would predict an increase in negative affect across days. Thus, a second regression analysis was conducted to determine the effects of acute physical symptoms at T1 on change in negative emotions. To test the hypothesis, a hierarchical regression analysis was conducted, with the slope of participants' negative affect across days as the dependent variable. Negative affect at T1 was included into the model as a control variable to ensure that the results concerning change were independent of participants' initial levels of negative affect. Similar to the same-day analysis, the main predictor variable of T1 acute physical symptoms was also entered into the regression equation. All independent variables were centered prior to analysis.

The results of the analysis are summarized in Table 4. Negative affect at T1 evidenced a significant negative association with change in negative emotions across days, $F(2, 199) = 120.90$, $R^2 = .37$, $\beta = -.63$, $p < .01$. Additionally, in support of the hypothesis, acute physical symptoms at T1 significantly predicted change in negative emotions, above and beyond the influence of negative affect at T1, and explained 9% of the variance, $F(2, 199) = 30.17$, $R^2 = .09$, $\beta = .31$, $p < .01$. Those participants who experienced a high number of acute physical symptoms at T1 experienced an increase in negative emotions across days.

An additional multivariate analysis was conducted to control for participants' age, sex, SES, and level of functional disabilities, and did not change the previously reported pattern of results. Similar to the same-day analysis, none of the control variables significantly contributed to change in negative affect across days, all $F_s(6, 195) < .71$, R^2 s

< .00, $ps > .40$, while both T1 negative affect, $F(6, 195) = 117.92, R^2 = .36, \beta = -.63, p < .01$, and T1 acute physical symptoms, $F(6, 195) = 24.12, R^2 = .07, \beta = .30, p < .01$, were still significant in predicting change in negative emotions across days.

Predicting change in acute physical symptoms. A third analysis was conducted to examine whether negative affect would predict subsequent change in acute physical symptoms across days. A hierarchical regression analysis was performed, using the slope of acute physical symptoms across days as an index of symptom change. In a first step, T1 acute physical symptoms were included to control for participants' initial levels of acute physical symptoms. In addition, negative affect at T1 was also entered as a predictor variable into the regression equation. All independent variables were centered prior to analysis.

The results of the analysis are shown in Table 4. Similar to the previous analysis involving negative affect, low levels of acute physical symptoms at T1 showed a significant negative association with change in acute physical symptoms across days, $F(2, 199) = 17.44, R^2 = .08, \beta = -.29, p < .01$. However, negative affect failed to predict an increase in acute physical symptoms across days, $F(2, 199) = .27, R^2 = .00, \beta = -.04, p > .10$. Thus, although acute physical symptoms were shown to predict change in negative mood over time, the experience of negative emotions did not influence change in acute physical symptoms.

An additional multivariate analysis controlling for participants' age, sex, SES, and level of functional disabilities did not change the pattern of results. None of the sociodemographic control variables significantly contributed to changes in acute physical symptoms across days, all $F_s(6, 195) < 1.33, R^2_s < .01, ps > .25$. However, participants'

levels of functional disabilities significantly contributed to changes in acute physical symptoms across days, $F(6, 195) = 5.76, R^2 = .03, \beta = .17, p < .05$. The greater the number of functional disabilities participants experienced, the greater the increase in acute physical symptoms across days. With the addition of the control variables, the main effect of T1 acute physical symptoms remained significant in predicting change in acute physical symptoms across days, $F(6, 195) = 22.98, R^2 = .10, \beta = -.35, p < .01$, while T1 negative affect still failed to predict change in acute physical symptoms, $F(6, 195) = .47, R^2 = .00, \beta = -.05, p > .10$.

Goal Adjustment Capacities

Cross-sectional findings. It was also hypothesized that goal disengagement and goal reengagement capacities would serve as buffers between levels of acute physical symptoms and same-day negative emotions. To test this hypothesis, the previously conducted regression analysis predicting negative affect at T1 was repeated and goal disengagement and goal reengagement were additionally entered as main effects into the first step of the regression equation. In a second step, the two-way interactions between acute physical symptoms and goal disengagement, and acute physical symptoms and goal reengagement were separately entered into the equation and tested for significance. In the third step, the three-way interaction between acute physical symptoms, goal disengagement, and goal reengagement was tested for significance. All predictor variables were centered prior to analysis.

As shown in Table 5, only the main effect of T1 acute physical symptoms contributed to T1 negative affect, as neither main effects of goal disengagement nor goal reengagement were related to same-day negative affect, all $F_s(3, 198) < 1.94, R^2_s < .01$,

Table 5.

Regression Analysis Predicting Same-Day Negative Affect by T1 Acute Physical Symptoms and Goal Adjustment Capacities

Predictors	Negative Affect T1		
	R^2	β	r
Main effects			
Acute physical symptoms (T1) (APS)	.06**	.25**	.24**
Goal disengagement (DIS)	.01	-.10	-.10
Goal reengagement (REENG)	.00	.02	-.04
Two-way interactions			
APS X DIS	.02*	-.15*	
APS X REENG	.02*	-.16*	
Three-way interaction			
APS X DIS X REENG	.00	-.05	

Note. ** $p \leq .01$, * $p \leq .05$. All effects remained significant if controlled for age, sex, SES, HECS, and functional disabilities.

p s > .17. However, results demonstrated significant interaction effects between the level of acute physical symptoms and goal disengagement, $F(1, 197) = 4.92, R^2 = .02, \beta = -.15, p < .05$, and acute physical symptoms and goal reengagement, $F(1, 197) = 4.84, R^2 = .02, \beta = -.16, p < .05$, in predicting same-day negative affect. The three-way interaction between acute physical symptoms, goal disengagement, and goal reengagement in predicting negative affect at T1 was not significant, $F(1, 194) = .35, R^2 = .00, \beta = -.05, p > .10$, indicating that goal adjustment capacities did not interact with each other in buffering the relationship between acute physical symptoms and same-day negative mood.

To illustrate the significant interaction effects, commonly employed regression techniques (see Aiken & West, 1991) were used to plot the relationship between acute physical symptoms and same-day negative affect separately for participants with low (-1 SD) and high (+1 SD) goal adjustment capacities. In support of the hypothesis, the shape of the interaction (Figure 3, left panel) suggested that goal disengagement moderated the relationship between same-day acute physical symptoms and negative affect. Analyses of the simple slopes indicated that a high number of acute physical symptoms predicted higher levels of negative affect, but only among participants who reported low goal disengagement capacities, $\beta = .40, p < .01$. By contrast, acute physical symptoms were not significantly associated to negative affect in participants who reported a high capacity to disengage from unattainable goals, $\beta = .07, p > .10$.

Also in support of the hypothesis, the shape of the interaction effect plotted in Figure 3 (right panel) suggested that goal reengagement capacity buffered the relationship between same-day acute physical symptoms and negative affect. Although

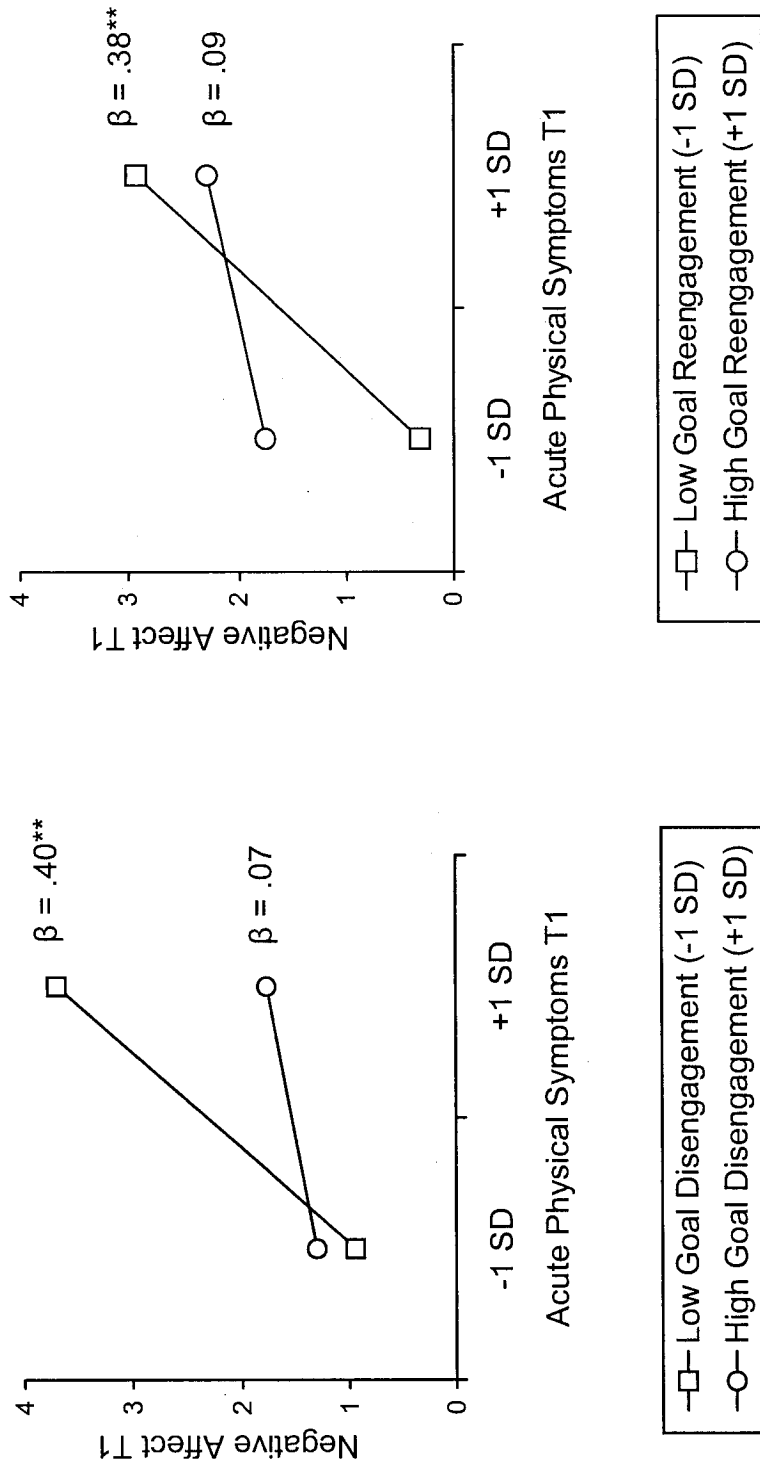


Figure 3. Two-way interactions between T1 acute physical symptoms and goal disengagement (left panel), and acute physical symptoms and goal reengagement (right panel) predicting negative affect at T1.

participants with low levels of acute physical symptoms and a high goal reengagement capacity appeared to experience more negative emotions than those who had a low capacity to reengage, analyses of the simple slopes indicated that a high number of acute physical symptoms predicted increased levels of negative affect only among participants who reported a low goal reengagement capacity, $\beta = .38, p < .01$. Conversely, acute physical symptoms were not significantly related to negative affect in participants who reported a high capacity to reengage in alternative goals, $\beta = .09, p > .10$. Thus, for those older adults experiencing many acute physical symptoms, a low capacity to reengage may make them particularly vulnerable to the experience of negative emotions.

An additional multivariate analysis revealed that all results remained significant ($ps \leq .05$) when controlling for participants' age, sex, SES, HECS, and functional disabilities. Of the control variables, age, sex, and functional disabilities did not significantly contribute to same-day negative emotions, all $F(8, 193) < .16, R^2s < .01, ps > .21$. However, both SES, $F(8, 193) = 3.79, R^2 = .02, \beta = -.14, p = .05$, and participants' reported levels of HECS, $F(8, 193) = 4.09, R^2 = .02, \beta = -.15, p < .05$, contributed to negative affect at T1. Those participants from a lower SES reported higher levels of negative emotions at T1 than participants from a higher SES. In addition, in line with previous research findings, HECS was significantly associated with same-day negative mood. Participants who reported higher levels of HECS experienced a lower level of negative emotions than those who reported lower levels of HECS. Importantly, the effects of both goal adjustment capacities remained significant above and beyond the effects of HECS.

Longitudinal findings. It was also hypothesized that goal disengagement and goal

reengagement capacities would buffer the relationship between acute physical symptoms and change in negative affect across days. To test the hypotheses, a subsequent hierarchical regression analysis was conducted to determine the interaction effects of acute physical symptoms and goal disengagement, and acute physical symptoms and goal reengagement on change in negative emotions. To measure change in negative emotions across days, the slope of participants' negative affect across the days was used as the dependent variable. To ensure that participants' change in negative affect across days was independent of participants' initial negative affect level, negative affect at T1 was entered into the analysis in the first step as a control variable. T1 acute physical symptoms, goal disengagement, and goal reengagement were also entered into the first step as main effects, and the interaction terms (acute physical symptoms by goal disengagement; acute physical symptoms by goal reengagement; physical symptoms by goal disengagement by goal reengagement) were separately tested for significance in subsequent steps. All independent variables were centered prior to analysis.

As shown in Table 6, in addition to the significant main effects of T1 negative affect and T1 acute physical symptoms in predicting change in negative affect, the main effect of goal disengagement capacities significantly contributed to change in negative affect across days, $F(4, 197) = 3.69, R^2 = .01, \beta = -.11, p = .06$. However, the main effect of goal reengagement capacities failed to reach significance, $F(4, 197) = .65, R^2 = .00, \beta = -.05, p > .10$. Analyses of the interactions partially supported the hypotheses, as results revealed a significant interaction effect between acute physical symptoms and goal disengagement in predicting change in negative affect, $F(1, 196) = 5.65, R^2 = .02, \beta = -.13, p < .05$. However, the hypothesized interaction between acute physical symptoms

Table 6.

Regression Analysis Predicting Change in Negative Affect Across Days by T1 Acute Physical Symptoms and Goal Adjustment Capacities

Predictors	Negative Affect Slope		
	R^2	β	r
Main effects			
Negative affect (T1)	.37**	-.63**	-.55**
Acute physical symptoms (T1) (APS)	.08**	.30**	.16*
Goal disengagement (DIS)	.01 ^t	-.11 ^t	-.05
Goal reengagement (REENG)	.00	-.05	-.09
Two-way interactions			
APS X DIS	.02*	-.13*	
APS X REENG	.00	-.03	
Three-way interaction			
APS X DIS X REENG	.01	.10	

Note. ** $p \leq .01$, * $p \leq .05$, ^t $p = .06$. All effects remained significant if controlled for age, sex, SES, HECS, and functional disabilities.

and goal reengagement was not supported, $F(1, 196) = .27, R^2 = .00, \beta = -.03, p > .10$.

Analysis of the three-way interaction between acute physical symptoms, goal disengagement capacity, and goal reengagement capacity in predicting change in negative affect, did not reach significance, $F(1, 193) = 2.39, R^2 = .01, \beta = .10, p > .10$.

These results indicate that, while goal disengagement capacity may buffer the relationship between acute physical symptoms and negative mood over a short time-span, goal reengagement may not provide protection against the experience of negative emotions for those older adults with acute health difficulties.

Figure 4 illustrates the significant interaction effect between acute physical symptoms and goal disengagement in predicting change in negative affect. In a similar manner as the same-day interaction, the association between acute physical symptoms and change in negative affect was plotted separately for participants with low (-1 SD) and high (+1 SD) goal disengagement capacity. In support of the hypothesis, the shape of the interaction (see Figure 4) suggested that goal disengagement buffered the adverse impact of acute physical symptoms on increased negative emotions across days. High levels of acute physical symptoms were significantly associated with a large increase in negative affect across days, especially among those participants with low goal disengagement capacities, $\beta = .45, p < .01$. Although analyses of the simple slopes also suggested an association between T1 acute physical symptoms and change in negative affect across days for participants with high levels of goal disengagement capacities, $\beta = .17, p = .05$, the emergence of a significant interaction effect suggests that this association was significantly smaller for those with high goal disengagement capacities than for those with lower goal disengagement capacities. This finding lends support to the hypothesis

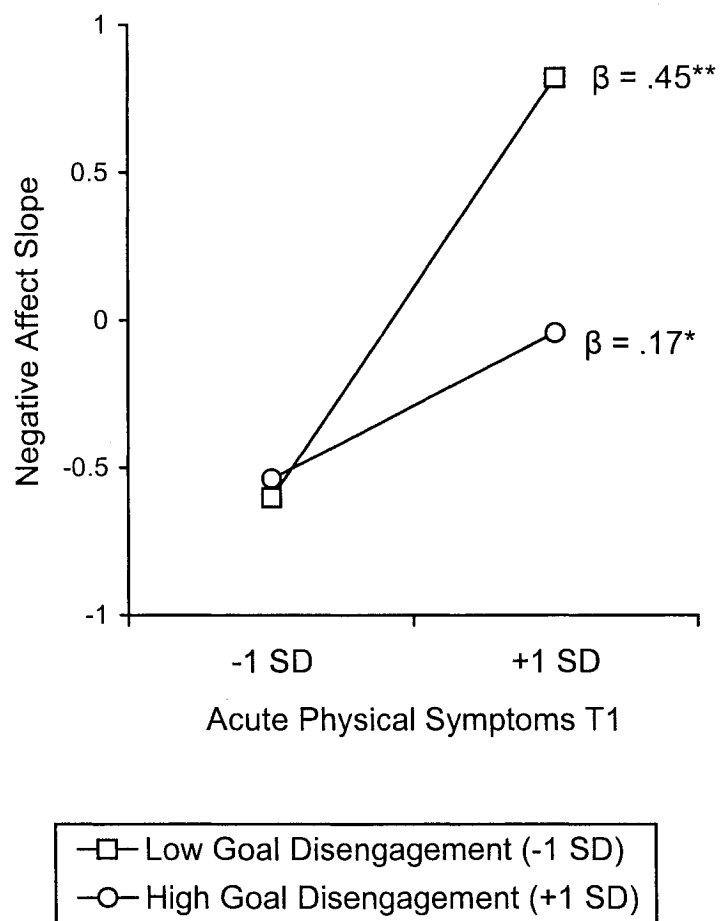


Figure 4. Two-way interaction between T1 acute physical symptoms and goal disengagement predicting change in negative affect across days.

that adaptive goal disengagement capacities can buffer the impact of acute physical symptoms on an increase in negative emotions over time.

Additional analyses controlling for age, sex, SES, HECS, and functional disabilities revealed that all results remained significant ($ps \leq .05$) when controlling for these variables, and that none of the control variables significantly contributed to change in negative emotions across days, all $F_s(9, 192) < 2.98$, R^2 's $< .01$, $ps > .09$.

Discussion

The present study examined the associations between acute physical symptoms and negative affect in older adults. Specifically, the objective of this study was to garner a more in-depth understanding of this relationship by examining it over a short-term longitudinal timeframe consisting of three non-consecutive normal days. In addition, this study was designed to determine if individuals' goal adjustment capacities could buffer the adverse effects of acute physical symptoms on negative mood.

The Relationship Between Acute Physical Symptoms and Negative Affect

A primary goal of this research was to determine the impact of acute physical symptoms on same-day and change in negative emotions across days. The findings of the present study revealed that acute physical symptoms contributed to both same-day negative affect and to an increase in negative emotions across three non-consecutive normal days. People who experienced acute physical symptoms experienced a higher level of same-day negative emotions than those who experienced fewer acute physical symptoms. Furthermore, individuals who experienced acute physical symptoms on the first day also experienced an increase in negative emotions across days. These findings document the detrimental impact of health problems on negative emotions and are in accord with previous findings using both cross-sectional and longitudinal studies (e.g., Aneshensel et al., 1984; Nakao & Yano, 2006; Viney & Westbrook, 1981; Wrosch et al., 2002). In addition, the findings extend previous research by providing insight into the short-term emotional experience of older adults who suffer from physical health declines and the subsequent acute physical symptoms.

Importantly, this study disentangled the effects of acute physical symptoms from

those that stem from functional disabilities by statistically controlling for the contribution of functional disabilities to negative emotions. In addition, this study also controlled for the effects of the age, sex, and socioeconomic status of participants. The results showed that acute physical symptoms contributed to negative affect above and beyond the effects of functional disabilities and sociodemographic control variables. This implies that acute physical symptoms are likely to represent an independent health factor that impacts the lives of older adults in a unique manner above and beyond the influence of functional disabilities and sociodemographic variables.

While previous research examining the relationship between acute physical symptoms and psychological distress has found that the experience of acute physical symptoms can contribute to the immediate experience of depressive symptoms (Wrosch et al., 2002) and to the development of clinically diagnosable levels of depression over a long time-span (Nakao & Yano, 2006), this study further contributes to the existing literature by examining a broad array of acute physical symptoms over a short longitudinal timeframe. Although the results from the present study are congruent with these previous findings, they also provide a more in-depth understanding of this relationship by demonstrating that acute physical symptoms can not only contribute to same-day negative affect, but may also lead to an increase in negative emotions over the course of several normal days. While acute physical symptoms, such as pain, may have contributed to the experience of negative emotions in the current sample, it is important to note that nearly one third of the acute physical symptoms experienced by participants included symptoms not associated with pain (e.g., dizziness, shortness of breath, nausea). Thus, the results of this study suggest that a diversity of acute physical symptoms can

impact the psychological well-being of older adults through the experience of pain or discomfort, or the constraints they place on daily goals and activities.

Contrary to the findings indicating the adverse impact of acute physical symptoms on negative mood, negative affect failed to significantly predict an increase in acute physical symptoms across days. However, these results are in accord with previous literature suggesting that the impact of negative emotions on physical health may be a process that develops over a longer time-span than several days (Aneshensel et al., 1984). That is, negative emotions impact health through different pathways, such as low motivation or health-compromising behaviours that take time to develop before having a significant effect on a person's physical health. For example, an individual who experiences depressive symptoms may engage in activities, such as regular alcohol consumption, to cope with negative emotions. This behaviour may impact physical health through the physiological consequences associated with alcohol (e.g., cirrhosis) and, subsequently, through concomitant behaviours (e.g., the inability to prepare meals or regularly attend appointments with a physician). Thus, the pathway from negative emotions to physical health decline is driven by mechanisms that effect health more gradually, while health symptoms can have a more immediate impact on negative mood.

Overall, results from this study demonstrate evidence for one pathway implicated in the proposed downward spiral that is characterized by physical illness, poor psychological well-being, and further health declines (Schulz, Martire, et al., 2000; Wrosch et al., 2004, 2006). Specifically, this study has shown that acute physical symptoms can contribute to negative emotions, and that this effect can persist over several days. In addition, this study has shown that negative emotions may take longer to

have an impact on health and subsequent declines. As previous research has often neglected to examine the deleterious impact of acute physical symptoms on negative emotions, the findings of this study suggest a need to focus research attention on these symptoms by documenting this adverse impact on older adults' psychological well-being.

The Moderating Role of Goal Adjustment Capacities

One of the primary purposes of this study was to determine adaptive self-regulation processes involved in the management of acute physical symptoms in older adults. Specifically, it was expected that goal disengagement and goal reengagement capacities would buffer the adverse effects of acute physical symptoms on same-day negative affect and increase in negative emotions across time. In addition, it was expected that the adaptive benefits of goal adjustment capacities would be observable above and beyond the effects of active engagements in coping with health-related challenges.

Active coping processes have been identified as adaptive strategies for overcoming manageable health-related challenges in older adults (Brandtstädter & Rothermund, 1994, 2002; Wrosch et al., 2002). For example, previous research has shown that health engagement control strategies (HECS) can benefit the well-being of older adults experiencing high levels of acute physical symptoms (Wrosch et al., 2002; Wrosch, Schulz, et al., in press). In line with previous research, the results of this study indicated that older adults' engagement in active coping processes was associated with less emotional distress. That is, participants who reported high levels of HECS experienced less same-day negative emotions than those who did not actively engage in coping with their health-related losses. However, it should be noted that HECS was

unrelated to a change in participants' negative emotions across days, indicating that active coping processes did not aid in reducing older adults' negative emotions across time.

A central theoretical tenet of this study was that active coping may not always be the most beneficial strategy for older adults facing manageable health challenges, as accommodative processes, such as goal disengagement and the reengagement in other life pursuits, were posited to be valuable coping processes as well. The present study addressed this issue by investigating the roles of goal disengagement and goal reengagement capacities, and controlling the findings in further analyses for HECS (and sociodemographic variables).

In support of the hypotheses, findings from this study indicated that both goal adjustment capacities evidenced beneficial effects for older adults' emotional well-being. In addition, also consistent with the expectations, the benefits of goal disengagement and goal reengagement for older adults' psychological well-being did not change for either cross-sectional or longitudinal results after controlling for participants' levels of HECS (and sociodemographic variables). Thus, the results from this study indicate that adaptively coping with acute physical symptoms does not only relate to goal attainment processes, but also to goal adjustment processes.

More specifically, this research has demonstrated that goal disengagement contributed to emotional well-being among participants who were experiencing high levels of acute physical symptoms. Results exploring the benefits of goal disengagement showed that among older adults who experienced a high number of acute physical symptoms, only those with a low disengagement capacity showed high levels of same-

day negative affect. By contrast, older adults who were able to let go of unattainable goals did not experience the consequent immediate negative emotions associated with acute physical symptoms. In a similar vein, the longitudinal findings also supported the hypothesis of the adaptive benefits of goal disengagement capacities. High levels of acute physical symptoms predicted an increase in negative emotions across time, but only among older adults who had difficulty with goal disengagement, and not among older adults who reported a high goal disengagement capacity.

In terms of the beneficial impact of goal reengagement capacities, the hypothesized buffering effect on same-day negative emotions was also supported. Those older adults who experienced high levels of acute physical symptoms concurrently experienced high levels of same-day negative emotions, but only if they had a low capacity to reengage in alternative life pursuits. However, the hypothesized buffering effect of goal reengagement on change in negative emotions across days was not supported by the analyses. Those older adults experiencing high levels of acute physical symptoms experienced an increase in negative emotions regardless of their goal reengagement capacities. Therefore, while these results indicate that goal adjustment capacities can play an important role in protecting older adults from the psychological distress associated with health-related challenges, they also point to some differential effects of goal disengagement and goal reengagement for older adults' emotional well-being.

The reported findings suggest that goal disengagement aids older adults by preventing them from experiencing the negative emotions associated with goal failure, and enabling them to retain a sense of control over their lives by disengaging from

pursuits that are no longer attainable. The findings from this study are consistent with the existing body of literature that has shown that disengagement from unattainable goals can help older adults to avoid poor psychological well-being (e.g., Wrosch & Heckhausen, 1999; Wrosch, Scheier, Miller, et al., 2003; Wrosch, Miller, et al., in press). This study also supports previous research documenting the shifting of importance from primary control strivings (persistence) to accommodative or self-protective secondary control processes (goal disengagement) in later adulthood (Brandtstädter & Renner, 1990; Heckhausen & Schulz, 1995; Wrosch, Heckhausen, & Lachman, 2000). With the experience of age-related constraints (e.g., time, physical resources), coping strategies aimed at active engagement may no longer be as beneficial as those that allow older adults to free up time and resources, and avoid the negative consequences of failure experiences. In addition, the ability to disengage from an unattainable goal represents a flexible strategy in facing unexpected daily challenges that may represent a beneficial coping style in later adulthood. Although research examining goal disengagement has evidenced the benefits of disengagement when dealing with developmental challenges, this research has extended these results by focusing on the benefits of goal disengagement for older adults who confront acute physical symptoms.

However, it is also important to note that although results indicated that there was a significant buffering effect of goal disengagement in the relationship between acute physical symptoms and change in negative affect across days, the results from this study also showed that older adults experiencing high levels of acute physical symptoms experienced an increase in negative emotions even if they reported high levels of goal disengagement capacities (although the effect was smaller). It may be that abandoning an

unattainable daily goal provides only partial emotional relief, but that subsequent negative states, such as feelings of failure, a loss of control, meaning and purpose in life, or rumination about the lost goal, may still ensue during the time following this disengagement. However, as those older adults who were unable to disengage from an unattainable goal showed a greater and more substantive increase in negative emotions across days than those older adults who were able to disengage from unattainable goals, goal disengagement may still be conceptualized as an adaptive coping process for older adults. Thus, although acute physical symptoms appear to contribute to an increase in negative emotions over a short timeframe, the ability to disengage from concomitant unattainable goals may lessen the severity of this effect. In addition, it may be that over a longer timeframe the capacity of an individual to disengage would completely buffer the impact of these acute physical symptoms on negative mood.

Goal reengagement also showed beneficial effects for older adults' psychological well-being in an immediate time-span. Among older adults with acute physical symptoms, goal reengagement may help to buffer the adverse effects of these symptoms on negative mood by providing feelings of accomplishment, control, and mastery, while at the same time preventing older adults from focusing on the negative aspects of goal failure. Interestingly, although goal reengagement was shown to buffer the relationship between acute physical symptoms and same-day negative affect, for those older adults with low acute physical symptoms, having a high goal reengagement capacity was associated with a higher level of negative emotions than those participants having low goal reengagement capacities. This is consistent with previous research that has found that while individuals with many important goals experience more life satisfaction, they

also experience more negative emotions than those with less important goals (Pomerantz et al., 2000). Thus, it may be that the older adults in this study who reported higher goal reengagement capacities experienced higher levels of negative emotions due to the anxiety or stress related to having many goals to pursue or daily tasks to accomplish. However, for those older adults facing high levels of acute physical symptoms, goal reengagement capacity provided protection from the experience of same-day negative emotions by allowing them to be engaged in pursuing other important daily aspirations.

As previously reported, the hypothesized longitudinal buffering effect of goal reengagement was not supported by the data. Thus, goal reengagement failed to protect older adults from experiencing an increase in negative emotions associated with acute physical symptoms. It may be that turning one's attention towards other meaningful goals helps maintain a sense of purpose in life and provides immediate protection against the threat of failure in goal strivings, but that this effect is not as beneficial over time as the experience of cumulative goals provides a source of anxiety and other negative emotions as the pressure to make progress towards these goals develops. As noted by Wrosch, Scheier, Miller and colleagues (2003), there is a "need to be sensitive to the possibility that the acquisition of new goals might be detrimental; that is, at some point, taking on new goals will deplete personal resources to such an extent that the person becomes stretched too thin" (p. 1506).

Another explanation for this finding may be provided by recent research documenting the differential beneficial effects of goal disengagement and goal reengagement on positive versus negative indicators of subjective well-being (Bauer, 2004; Wrosch, Miller, et al., in press). Wrosch, Miller, and colleagues suggested that the

primary aim of goal disengagement is to provide individuals with relief from the experience of the resultant psychological distress associated with the inability to attain important goals, thus decreasing negative emotions when utilized. By contrast, goal reengagement is aimed at providing individuals with purpose in life, thus contributing to individuals' psychological well-being through an increase in positive emotions (Wrosch, Miller, et al.). Therefore, while goal disengagement may play an important role in individuals' psychological well-being by helping to avoid the experience of negative emotions, goal reengagement may play an equally important role by helping to increase positive emotions; however, this effect may not be detected in research specifically examining negative aspects of psychological distress. Indeed, previous research has shown goal reengagement to be associated with positively formulated measures of well-being, such as positive affect (e.g., Bauer, 2004) and purpose in life (Wrosch, Scheier, Miller, et al., 2003). As this study focused solely on measures associated with negative affect, the positive impact of goal reengagement on psychological well-being may not have been detected. Thus, future research should address this issue by evaluating both positive and negative indicators of subjective well-being.

It should be noted that this study also explored whether goal disengagement and goal reengagement would interact in predicting levels of negative emotions in older adults with acute physical symptoms. However, significant three-way interactions between acute physical symptoms, goal disengagement, and goal reengagement did not emerge. Thus, these results provide further evidence indicating that goal disengagement and goal reengagement may be conceptualized as adaptive coping processes that can work independently from each other, and may impact psychological well-being through

different mechanisms. However, while these results are inconsistent with some previous findings suggesting that disengagement from unattainable goals can have negative effects on older adults' well-being if they do not have alternative goals to pursue in their lives (Wrosch, Scheier, Miller, et al., 2003), they are also consistent with other results involving samples of younger adults that highlight the independent effects of goal adjustment capacities. In terms of the present study, it may be that the interaction effects between these two self-regulatory capacities do not necessarily evolve over such a short timeframe, but become more important over a longer time period (e.g., months or years). In addition, as this study solely measured negative emotions, the adaptive interplay between goal disengagement and goal reengagement may only emerge when measuring both positive and negative aspects of psychological well-being, as previous research has indicated that both goal adjustment capacities can interact in buffering the adverse effects of goal failure on change in life satisfaction (Wrosch, Miller, et al., in press).

Taken together, the results from this study indicate that goal disengagement and goal reengagement processes can prevent older adults from experiencing the negative emotions that result from the experience of acute physical symptoms. These findings support recent theoretical models describing the relation between health and depression in the elderly, in which physical health problems are conceptualized as a substantive risk factor for psychological distress, and adaptive self-regulatory processes are proposed to represent a buffering mechanism in this association (e.g., Wrosch et al., 2004, 2006).

Overall, this study supports the notion of a downward spiral that has been proposed in the existing literature (Schulz, Martire, et al., 2000; Wrosch et al., 2004, 2006), by demonstrating the deleterious impact of physical health on psychological

distress. However, the results of this study also provide optimism that this downward spiral may be avoided by showing that the use of adaptive self-regulatory processes associated with goal adjustment capacities can prevent the subsequent negative emotions that stem from acute physical symptoms, which may ultimately adversely affect long-term health. Importantly, the present study also highlights that adaptive coping processes for older adults facing health-related challenges may involve both active and less active coping strategies, as both goal disengagement and goal reengagement were seen to provide unique benefits to older adults' emotional well-being beyond the adaptive benefits of active engagements.

Limitations and Future Research

Although this study has demonstrated cross-sectional and longitudinal evidence that can contribute to a better understanding of the relation between health problems and negative emotions in older adults, several limitations are noteworthy. For example, although the age of the sample ranged up to 93 years, the proportion of the so-called "old-old" population is limited, with only 2% of the sample falling above 85 years. This is an important limitation that should be addressed in future research, as it is this portion of the population that may be especially vulnerable to the experience of physical health declines. However, it is also important to note that the large sample of over 200 older adults used in this study demonstrated heterogeneity in terms sociodemographic variables, such as education level and socioeconomic status. As such, the sample can be seen as representing a major strength of this study in terms of the generalizability of the findings.

Another limitation of the present study relates to the self-report nature of the main

study variables. The validity of self-reported health may depend on a person's capacity to accurately remember past health events. In addition, research has indicated that self-reported health variables may be influenced by certain dispositions, such as negative affectivity. For example, individuals who generally experience more negative emotions also tend to report more health problems as an artifact of their psychological distress (Beekman, Deeg, Smit, & Tilburg, 1995; Watson & Pennebaker, 1989). However, although this may be an important limitation, it should be noted that the participants were asked to rate their experienced acute physical symptoms and negative emotions at the end of each day. Thus, these measures are not as "memory-dependent" as other measures (e.g., asking participants to report about a larger time-span) and should thus be more salient in the participants' minds. In addition, several of the analyses that were conducted predicted change in the outcome variable, thereby controlling for some of the problems associated with self-report measures. That is, the use of change variables in the analyses controlled for some individual difference variables (e.g., negative affectivity or social desirability) by examining the impact of the predictor variables on intraindividual change in the outcome variables. Thus, while the self-report nature of these variables may be perceived as a limitation, in fact the use of change measures may actually represent a strength of the present study, as individual biases related to self-report measures would be consistent across all measurement points, allowing a clear examination of intraindividual change across days.

It has been found previously in the literature that psychological distress can have a significant impact on health and functioning - a finding not replicated by this study. Although the results are consistent with the explanation that psychological distress would

not impact physical health over a short time-span, the nature of the sample and measures might instead be accounting for this finding. Participants in the sample were, on average, physically healthy, and results may have differed if there was greater variability in participants' acute physical symptoms. However, given that the results already supported the hypotheses in a relatively healthy sample of older adults, it may be that larger effects would be found in a more health-heterogeneous sample and the reported results represent an underestimation of the detrimental effects of acute physical symptoms on negative affect. Given that the present sample will be followed over the next years, future research may be able to address this issue.

In addition, one of the main assumptions of this study was that the acute physical symptoms experienced by participants represented manageable health conditions that older adults may be able to overcome. However, the methodology used in this study preclude the testing of this assumption, as some of the reported symptoms may be directly related to chronic underlying conditions that cannot be changed. Future research could potentially involve a more detailed investigation regarding the chronicity and manageability of each of the acute physical symptoms to address this limitation.

Furthermore, given the conflicting results in the literature regarding the beneficial effects of goal reengagement, more research is needed regarding when the acquisition of new goals is protective and when it is no longer adaptive. In addition, future research involving goal adjustment capacities should focus on both the positive and negative psychological effects of goal adjustment capacities, as goal reengagement may have positive implications for psychological well-being that may be more likely to be detected through the measurement of positive emotions (Wrosch, Miller, et al., in press). In the

same vein, more research is needed to examine when goal disengagement becomes maladaptive and, more specifically, which goals are beneficial for older adults to abandon, and which are imperative for maintaining daily functioning and subjective well-being.

Importantly, although goal adjustment capacities were shown to be adaptive by providing protection against the experience of negative emotions in those older adults who experienced acute physical symptoms, other variables may play an important role, or account for the buffering effect of goal adjustment capacities. For example, research has shown that psychosocial resources can protect older adults from the psychological distress associated with chronic disease (Bisschop, Kriegsman, Beekman, & Deeg, 2004; C. J. Holahan, Moos, C. K. Holahan, & Brennan, 1995). In addition, having strong social support may be a particularly salient variable that contributes to participants' capacities to disengage from unattainable goals and reengage in alternative goals. With a strong and supportive social network, a change of goals or daily aspirations may be deemed less threatening and more viable, while a social support network that is deemed unsupportive or distant may result in actual or perceived reduced opportunities to adjust goals. While the reported analyses did not address the role of social support, it should be noted that the study also included measures of social support. To explore the influence of social support measures, additional analyses (not previously reported) were conducted controlling for social support satisfaction and network size. Results indicated that while social support satisfaction had a buffering effect in the relationship between acute physical symptoms and same-day negative affect, the nature and the significance of the immediate and short-term beneficial effects of goal disengagement and goal reengagement capacities did not

change if the analyses were statistically controlled for social support satisfaction and network size.

Finally, while the present study offers support for the existing theoretical models regarding the relationship between physical illness, psychological well-being, and adaptive self-regulation, future research should also focus on the practical application of these processes to aid older adults who suffer from physical health problems. Thus, it is important that future research involve clinical intervention studies that may inform programs designed to help older adults adjust to their age-related challenges. Indeed, researchers have begun to use experimental interventions aimed at engaging older adults in self-protective processes (e.g., downward social comparisons, external attributions, the commitment to future goals) expected to facilitate disengagement from goals that can no longer be attained (Wrosch, Bauer, Miller, & Lupien, submitted for publication). Thus, goal disengagement processes may be changed through interventions among older adults who experience health problems, and thus enable them to maintain a sense of psychological well-being. In this regard, the results from the present study can contribute to a more sophisticated understanding of adaptive self-regulation of stressors in old age, as well as to the elaboration of a theoretical model specifying psycho-social pathways to successful aging. Thus, it is important that research continue to identify pathways to successful aging, and to apply this knowledge in order to enhance the quality of life in the later years of our aging population, thereby contributing to the broader goal of adding years to life, and life to years.

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Appendix A
Consent Form

CONSENT FORM TO PARTICIPATE IN RESEARCH

This is to state that I agree to participate in a program of research being conducted by Dr. Carsten Wrosch of the Psychology Department of Concordia University.

A. PURPOSE

I have been informed that the purpose of the research is to study older adults' goal management, well-being, and health.

B. PROCEDURES

This research will involve a questionnaire and 15 salivary cortisol samples collected over the course of three typical days. A research assistant will go to the participant's home to administer part of a questionnaire on goal management, well-being and health, as well as to explain the saliva collection procedure. The rest of the questionnaire will be filled in by the participant while alone and should take approximately one hour to complete. The saliva collection will involve chewing a provided cotton swab for one minute before replacing it in its salivette. The saliva collection will be performed five times a day at specific times. The participant will receive phone calls from the research assistant to remind him/her to take a salivary cortisol sample. The participant will receive \$50 for participating in the study.

There should be no risks or discomfort involved in answering the questions or collecting the salivary cortisol samples. The participant's name will not be attached to the questionnaire, although the signatures and names on the consent forms will be collected and stored separately by the supervising professor. The participant is free to refuse to answer any question that makes him or her uncomfortable answering.

C. CONDITIONS OF PARTICIPATION

- I understand that I am free to withdraw my consent and discontinue my participation at anytime without negative consequences. Even if I discontinue my participation, I will receive \$50.
- I understand that my participation in this study is CONFIDENTIAL (i.e., the researcher will know, but will not disclose my identity)
- I understand that the data from this study might be published.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

WITNESS SIGNATURE _____

DATE _____

Appendix B

Questionnaire About Daily Acute Physical Symptoms

DAY 1¹

Today, have you been bothered by.....

	NO	YES
1. Stomach pain		
2. Back pain		
3. Pain in your arms, legs or joints (knees hips, etc.)		
4. Pain or problems during sexual intercourse		
5. Headaches		
6. Chest pain		
7. Dizziness		
8. Fainting Spells		
9. Feeling your heart pound or race		
10. Shortness of breath		
11. Constipation, loose bowels, or diarrhea		
12. Nausea, gas or indigestion		

¹ The same questionnaire format was used to assess acute physical symptoms on all three days.

Appendix C

Questionnaire About Daily Negative Emotions

DAY 1²

To what extent did you experience each of the following emotions today? Check the appropriate box next to the emotion.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1. Lonely					
2. Stressed					
3. Sad					
4. Upset					
5. Hostile					
6. Isolated					
7. Overwhelmed					
8. Unhappy					
9. Angry					

² The same questionnaire format was used to assess negative affect on all three days.

Appendix D

Goal Adjustment Scale:

Goal Disengagement And Goal Reengagement

Goal Adjustment

During their lives people cannot always attain what they want and are sometimes forced to stop pursuing the goals they have set. We are interested in understanding how you usually react when this happens to you. Please indicate the extent to which you agree or disagree with each of the following statements, as it usually applies to you.

If I have to stop pursuing an important goal in my life...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. It's easy for me to reduce my effort towards the goal.					
2. I convince myself that I have other meaningful goals to pursue.					
3. I stay committed to the goal for a long time; I can't let it go.					
4. I start working on other new goals.					
5. I think about other new goals to pursue					
6. I find it difficult to stop trying to achieve the goal.					
7. I seek other meaningful goals.					
8. It's easy for me to stop thinking about the goal and let it go.					
9. I tell myself that I have a number of other new goals to draw upon.					
10. I put effort toward other meaningful goals.					

Appendix E

Questionnaire About Demographics

Personal information

1. Sex Female Male
2. Age _____ yrs.
3. **Highest Level of Education Completed**
- None
 - High School
 - Collegial or Trade School
 - Bachelor's Degree
 - Masters or Doctorate Degree
4. **Current Family income (per year):**
- Less than 17 000\$
 - 17 001\$ - 34 000\$
 - 34 001\$ - 51 000\$
 - 51 001\$ - 68 000\$
 - 68 001\$ - 85 000\$
 - more than 85 000\$
1. Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off, those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off, those who have the least money, least education, and worst jobs or no job. Please, place an X on the rung that best represents where you think you stand on the ladder?



Appendix F

Questionnaire About Functional Disabilities

Activities of Daily Living

Please answer the following questions regarding your daily chores. Place a check under "No" if you do not experience any difficulty with the specific chore. If you do experience some difficulty with that chore, we would like you to first evaluate the amount of: 1) difficulty completing the chore; 2) physical strain involved **and** 3) emotional strain experienced with this chore, using the scale below. Please write the corresponding number under each of the "yes" columns.

- 1 = very slightly or not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = extremely

Because of health or physical problems, do you have any difficulty or are you unable:	No	Yes		
		Difficulty	Physical strain	Emotional strain
...to eat, including feeding yourself?				
...to dress yourself?				
...to bathe or shower?				
...to use the toilet including getting to the toilet?				
...to walk around the home?				
...to get in and out of a bed or a chair?				
...to do heavy housework, like scrubbing floors or washing windows, or yard work, like raking leaves or mowing?				
...to do light housework?				
...to do shopping for personal items?				
...to prepare meals?				
...to manage money, such as paying bills?				
...to use the phone?				

Appendix G

Health Engagement Control Strategies

Health Management

To what extent does each of the following statements apply to you? For each statement, please indicate the extent to which of the following statements *usually* applies to you.

	Almost Never True	Seldom True	Some- times True	Often True	Almost Always True
1. I invest as much time and energy as possible to improve my health.					
2. If I develop a new health problem, I immediately get help from a health professional (e.g., doctor, nurse).					
3. When I decide to do something about a health problem, I am confident that I will achieve it.					
4. I do whatever is necessary to be as healthy as I possibly can be.					
5. When a treatment doesn't work for a health problem I have, I try hard to find out about other treatments.					
6. Once I decide what I need to do to improve my health, I avoid things that could distract me from doing these things.					
7. If I have a health problem that gets worse, I put in even more effort to get better.					
8. When I first notice a health problem, I try to get as much advice as I can from people who might know something about the problem.					
9. I often think about how important good health is to me.					