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Perceived Control and Coping Strategies in Relation to Anxious and Depressive Symptoms in Older Women Confronted to Activity Restriction Due to Osteoarthritis

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Perceived Control and Coping Strategies in Relation to Anxious and Depressive Symptoms in Women with Activity Restriction due to Osteoarthritis

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Abstract

In later life, osteoarthritis is a prevalent (Badley, 1995; Health Canada, 1999) and chronic disabling condition (e.g. Blixen & Kippes, 1999; Buckwalter & Martin, 1995; Burke & Flaherty, 1993; Croft, Lewis, Jones Wynn, Coggon, & Cooper, 2002; Hochberg, 1984) which is also associated with psychological distress. Adaptation to stressful life circumstances, including a chronic illness such as osteoarthritis, appears to be influenced by perceived control and coping strategies (Lazarus & Folkman 1984; Moos & Schaeffer, 1993). The present cross-sectional correlational study examined the relationships between perceived control and coping strategies when faced with a specific osteoarthritis-related stressor, that is, specifically limitations in activity, and assessed their capacity to predict two possible outcomes, i.e. anxious and depressive symptoms. This study also addressed the effect of the interaction of perceived control with coping strategies on both anxious and depressive symptoms. Self-report data were obtained from 92 older women suffering from osteoarthritis, through four hospital-based orthopaedic clinics located in the Ottawa-Gatineau region, where they were awaiting hip or knee surgery. The findings revealed that perceived control did not predict anxious symptoms, while coping strategies (approach-type coping, in particular) did. In contrast, for the prediction of depressive symptomatology, perceived control and coping strategies (approach-type coping, specifically) individually predicted depressive symptoms. However, perceived control did not hold higher predictive value than coping strategies in the prediction of depressive symptoms. Finally, the interaction of perceived control with coping strategies was significant only in the prediction of depressive symptoms, with higher perceived control combined with lower use of avoidance-type

coping strategies predicting lower depressive symptomatology, specifically. Overall, results suggest that perceived control and coping strategies with regard to activity restriction are differently related to anxious and depressive symptoms. Regarding anxiety symptoms, only a specific type of approach coping, i.e. positive interpretation, was negatively associated with them. As for depressive symptoms, higher perceived control, higher use of approach-type coping strategies and lower use of avoidance-type coping strategies, individually predicted lower depressive symptomatology. All approach-type coping strategies (active coping, planning and positive reinterpretation) were negatively related to depressive symptoms, while one type of avoidance-type coping strategy, behavioural disengagement, was positively associated with them. Additionally, higher perceived control combined with lower use of avoidance coping contributed to lower depressive symptomatology. The cross-sectional nature of the study and correlational analyses do not allow to state causal relationships. The strengths and limitations of the study, as well as its implications for future research and clinical applications, are discussed.

Introduction

With advancing age, there is an increase in physical illness and its complications, such as disability (Lipowski, 1979). Physical illness can have a major impact on psychological well-being; it can lead to onset, recurrence or exacerbation of psychological disorders or symptoms (Lipowski, 1979). A declining health status accompanied by disability is a known risk factor for the development of depressive symptoms (Beekman, Penninx, Deeg, Ormel, Braam, & van Tilburg, 1997a; Clark, Cook, & Snow, 1998) and anxious symptoms (Sheikh, 1992; Wells, Golding & Burnam, 1988). Psychological distress (i.e. manifestation of depressive and/or anxiety symptoms) in advancing age tends to co-occur with chronic illnesses such as osteoarthritis, rheumatoid arthritis, diabetes and stroke (Penninx et al., 1996). This frequent co-occurrence of prevalent chronic diseases and symptoms of psychological distress in older age is a phenomenon worthy of special attention.

The first chapter begins by examining the relationship between physical illness, functional disability, and psychological distress in late adulthood. Then, it focuses on the association between osteoarthritis (OA), a particular chronic illness with a high prevalence in later life, and psychological factors (i.e. depressive symptoms and anxious symptoms). The contribution of appraisal, more specifically, perceived control and coping strategies with regard to OA-related activity restriction, on psychological outcome among older adults will be addressed next, with a review and synthesis of existing research in that field. The limitations of previous studies will be discussed and a study exploring how perceived control and coping strategies in regards to activity restriction relate to anxious and depressive symptoms in older OA

women will be proposed. The second chapter will describe the methodology of the study, including participants, measures, procedure, and statistical analyses. The third chapter will present the results of the study. And, the fourth and final chapter will consist of the discussion of the findings, the strengths and limitations of the study, as well as the implications for research and clinical practice.

CHAPTER 1

Physical illness, functional disability and psychological distress

Extent of physical illness in older population

There is an increase in the prevalence, the severity and the complications of physical disease in late life (de Beurs et al., 1999). More than 80 % of people in their seventies and eighties suffer from a physical disease and over 50% of them experience one activity-limiting illness (Rossman, 1986). Chronic diseases such as cardiac disease, stroke, diabetes mellitus, lung disease, cancer, musculoskeletal diseases (e.g. osteoarthritis, rheumatoid arthritis) and hypertension are common among seniors (Harwood, Prince, Mann, & Ebrahim, 1998; Lipowski, 1979; Penninx et al., 1996). According to a Canadian study (The National Population Health Survey (NPHS)) conducted from 1994 to 1995, 72% of men and 80% of women were suffering from at least one chronic illness (Moore, Rosenberg, & Fitzgibbon, 1999). Moreover, according to the NPHS, 27% of Canadian men and 33% of Canadian women, aged 55 and over, experience three or more chronic conditions (Moore et al., 1999).

Chronic medical conditions in late adulthood usually involve physical loss and disability in activities of daily living (Nir & Galinsky, 2000). Among other consequences associated with chronic illness, are pain, deformity, anxiety, depression, loss of self-confidence, negatively altered interpersonal relationships and diminished quality of life (Plutchik, Botsis, Weiner, & Kennedy, 1996).

Psychological distress

People with chronic physical illness appear to be vulnerable to psychological distress (Hocking & Koenig, 1995; Penninx et al., 1996). The emergence of medical illness, accompanied by disability, constitutes a risk factor for the development of depressive symptoms and depressive disorders (Beekman et al., 1997a; Clark et al., 1998; Plutchik et al., 1996) as well as anxiety symptoms and anxiety disorders (de Beurs et al., 1999; Plutchik et al., 1996).

Current research typically characterizes psychological distress in old age as the occurrence of depressive symptoms (e.g. Berkman et al., 1986; Dent et al., 1999) or major depression (e.g. Beekman et al., 1997a; Gallo & Lebowitz, 1999). Although anxiety constitutes another facet of psychological distress in chronic physical illness (Beekman & al., 2000; de Beurs & al., 1999), it has been studied less frequently. Yet both depressive symptoms (Alexopoulos et al., 1996), and anxious symptoms (de Beurs et al., 1999), appear to have a significant negative impact on quality of life.

Depression

The definition of depression, its prevalence in late life and its possible consequences will be presented in this section.

Definition of depression. Depression is considered a reaction to actual, perceived or anticipated loss (Kendall & Watson, 1989). It may be seen as a loss of motivation across personal domains, including behavioral (e.g. reduced activity level), somatic (e.g. loss of appetite, sleeping difficulties), and cognitive (e.g. concentration difficulties, self-depreciating thoughts) (Kendall & Watson, 1989). When depressed, people tend to hold a negative view of

themselves (e.g. worthlessness and helplessness), the world (e.g. pessimism) and the future (e.g. hopelessness) (Beck, 1972). From a psychiatric perspective, depression can be viewed as a diagnostic entity meeting criteria delineated in The Diagnostic and Statistical Manual of Mental Disorder-4th edition (DSM-IV-TR; American Psychiatric Association, 2000). Depression in its most severe form is defined as a major depressive disorder in the DSM-IV. However, many studies (e.g., Beekman & al., 1995; Snowdon, 1990; Blazer, 1994) have concluded that often, depressive symptoms in older adults do not meet the diagnostic criteria for a major depressive episode. In an appendix to the fourth edition of the DSM minor depressive episode is proposed as another diagnostic entity to include in a future edition of the manual. This category of mood disorder requires the manifestation of three symptoms (instead of five or more for the diagnosis of a major depressive episode).

Prevalence of depression. The prevalence of major depression is estimated at 3% among community dwelling older adults aged 60 and over (Blazer, Hugues, & George, 1987; Hendrie et al., 1995; Mulsant & Ganguli, 1999; Zarit, Femia, Gatz, & Johanson, 1999). Rates of minor (or subsyndromal) depression are considered to be 12 to 20% among community dwelling elders aged 60 years and over (Beekman et al. 1995; Blazer et al., 1987; Mulsant & Ganguli, 1999; Zarit et al., 1999). In primary care, the prevalence of depressive symptoms is estimated around 20%, while the prevalence of major depression is evaluated between 10 and 12% (Schulberg et al. 1992). In the hospital context, the prevalence rates are evaluated at 10 to 15% for major depression and at 20 to 25% for subsyndromal depressive symptomatology (Koenig, Cohen, Blazer, Krishnan, & Sibert, 1993). These results suggest that rates of depressive disorders are

higher among primary care and hospitalized patients compared to community dwelling older adults. Furthermore, regardless of setting, the proportion of older adults presenting depressive symptoms appears to notably exceed the proportion of elders exhibiting a major depressive episode.

Consequences of depressive symptomatology. A number of serious negative consequences appear associated with the presence of depressive symptoms in late life, such as higher mortality risk caused by illness or suicide (Gallo & Rabins, 1999), physical disability (Beekman, Deeg, Braam, Smith, & van Tilburg, 1997b), social isolation, longer hospitalization stays, higher frequency of medical services utilization (Judd, Paulus, Wells, & Rapaport, 1996, Wells et al., 1989), and poor quality of life (Beekman et al. 1997b.)

Anxiety

The definition of anxiety, its prevalence in older age and possible consequences will be addressed in this section.

Definition of anxiety. Anxiety is a subjective experience characterized by excessive apprehension about life events and/or problems. Anxiety, which is a normal reaction to stressful, dangerous or threatening encounters, can become pathological when it is triggered frequently in the absence of real danger (Hocking & Koenig, 1995). The main symptoms of anxiety are: autonomic hyperactivity (sweating, accelerated heart beat, hot flashes), motor restlessness (agitation), trembling and sleep disturbances (insomnia, difficulty falling asleep or staying asleep) (Fernandez, Levy, Lachar, & Small, 1995). Anxiety symptoms vary along a continuum, ranging from normal functioning to a state of anguish. At clinical levels, anxiety symptoms can

be envisioned in function of the diagnostic criteria formaulated for anxiety disorders, as defined by the DSM-IV (generalized anxiety disorder, panic disorder with/without agoraphobia, agoraphobia, social anxiety disorder, phobic disorder, obsessive-compulsive disorder, posttraumatic disorder, acute stress disorder) (Fernandez et al., 1995).

Prevalence of anxiety. The overall prevalence of anxiety disorders among elderly people is estimated at 10% (Beekman et al., 1998). In women only, it is estimated at 13.7% (Beekman et al., 1998), women appearing to be afflicted by anxiety disorders at two times the rate of men (Beekman et al., 1998). In the chronically ill population, Wells and colleagues (1988) have reported that 11% of individuals experienced an anxiety disorder. Anxiety symptoms, also known as subsyndromal anxiety, appear to be common among older adults. They are present in 10-20% of older persons suffering from a medical illness (Sheikh, 1992) and in 52.3% of the old (70 to 84 years old) and very old (85 to 103 years old) (Schaub & Linden, 2000). People who suffer from chronic physical illness seem to be more vulnerable to psychological symptoms such as anxiety (Hocking & Koenig, 1995). Physical disability accompanying medical illness can represent a threat to the self and consequently trigger a level of anxiety associated with the need to adapt (Wykle & Mion, 1990).

Consequences of anxiety. A number of negative consequences have been associated with anxiety, such as increased physical disability, impaired well-being and higher use of health care services (de Beurs et al., 1999; Hocking & Koenig, 1995). In a sample of older adults, de Beurs and colleagues (1999) reported that anxiety symptoms and formal anxiety disorders had similar negative impact on disability and well-being. This suggests that anxiety symptoms produce as

much adverse consequences on life as a diagnosed anxiety disorder.

In summary, depressive symptoms as well as anxious symptoms are common in late adulthood, especially in medically ill older adults. Both of these manifestations of psychological distress are associated with physical disability, impaired well-being or poorer quality of life and higher use of medical services. Although anxious symptoms appear to be as prevalent as depressive symptoms in late life, they have not received as much attention from research as depressive symptoms.

Disability

Definition of disability

Disability has been approached and defined in a number of ways. It can be considered as a relative inability to perform specific fundamental tasks of daily living, for example, inability to feed oneself and to move around the house (Bruce, 2000). It has also been defined as a limitation in the ability to perform major activities of daily life (Yelin, 1992). The notion of disability can also encompass incapacities in a broader array of physical, social and professional activities (Bruce, 2000). The common element among the different definitions of disability is that "disability is part of a process influenced by biological and social factors" (Bruce, 2000, p.13). The World Health Organization's International Classification of Impairment, Disabilities, and Handicaps distinguishes three levels of disablement (ICIDH): a) "impairment" which is defined as "any loss or abnormality of psychological, physical or anatomical structure or function" (e.g. joint stiffness in arthritis), b) "disability" which is described as "a restriction or lack, resulting from an impairment, in the ability to perform an activity in the manner considered normal for a

human being" (e.g. inability to feed oneself), c) "handicap" which is characterized as "a disadvantage for an individual resulting from ill health compared with what is normal for someone of the same age, sex and background" (e.g. not being able to pursue a career) (World Health Organization; WHO, 1980). Another way of distinguishing disability and handicap is the level at which it manifests in one's life. For instance, disability constitutes the manifestation of the illness at an individual level (e.g. inability to stand up for a long period of time), whereas handicap is a manifestation of the illness in interaction with the environment, involving the performance of social roles that can vary from one individual to another (e.g. difficulty carrying out tasks in the workplace) (McFarlane & Brooks, 1997).

In 1993, revision of the 1980 ICIDH began, and in 1997, a "beta-1 draft" of the ICIDH-2 was finalized for field testing (Bickenbach, Chatterji, Badley & Üstün, 1999). In 2001, the second edition of the ICIDH was accepted by the executive board of the WHO (WHO, 2001). This new classification is based on a "biopsychosocial model" which includes both the medical and social approaches to disablement. It has three dimensions: impairments, activity limitations and participation restrictions. In this second edition of the ICIDH, the term "activity limitations" has replaced "disability" and "participation restrictions" has replaced "handicap". In line with the ICIDH, Parmelee and colleagues (1995) have operationalized physical disability as the inability or diminished capacity, due to physical impairment, to perform personal customary activities usually required for independent community living. Functional disability refers to behavioural difficulties in responding to environmental demands, such as basic activities of daily living (ADL; e.g. dressing up, eating, sitting, walking) and instrumental activities of daily living (IADL;

e.g. preparing meals, driving the car, shopping) (Agüero-Torres, Hilleras, & Winblad, 2001; Bruce, 1999; Moore, Rosenberg, & Fitzgibbon, 1999; van der Heide et al., 1994; Verbrugge & Jette, 1994). To this functional disability definition, Spector (1996) adds mobility difficulties such as walking and climbing stairs. Similarly, Schnittker (2005) refers to functional disability as difficulties in mobility, in lifting and carrying heavy weight (e.g. 10 pounds) and in activities of daily living. Some authors use the terms functional disability and activity restriction interchangeably to describe the extent to which usual activities are restricted (Agüero-Torres, Hilleras, & Winblad, 2001; Newman, 1997; Williamson & Schulz, 1992; Williamson & Schaffer, 2000). For the remainder of this paper, the terms functional disability and activity restriction will be used interchangeably.

Prevalence of functional disability

Among seniors aged 65 and over, approximately 35% experience difficulty with one or more activities (Schulz, Heckhausen, & O'Brien, 1994). Prohaska, Mermelstein, Miller and Jack (1993) reported that 62% of older adults above the age of 85 years experience functional disability. A wide array of medical conditions can cause functional disability. The Department of Health, Education and Welfare of the United States (1974) stated that, among chronic conditions, arthritis comes a close second to heart conditions. Osteoarthritis ranks high with heart problems as a major cause of disability among older adults (Turner & Beiser, 1990). According to some sources (e.g. Burke & Flaherty, 1993; Blixen & Kippes, 1999; Hochberg, 1984), OA represents the greatest cause of disability in older populations.

Role of functional disability in the link between physical illness and psychological distress

Functional disability is closely associated with chronic medical illness (e.g. Hardwood, Prince, Mann, & Ebrahim, 1998; Turner & Noh, 1988) and psychological distress (e.g. Beekman et al., 2000; Dent et al., 1999; Kennedy et al., 1989; Turner & Beiser, 1990). Disability associated with physical illness is considered a risk factor for depressive symptoms (Berkman et al., 1986; Dent et al., 1999; Kennedy et al., 1989; Koenig et al., 1992; Rovner, Zisselman, & Shmuely-Dulitzki, 1996; Viney & Westbrook, 1981) and anxious symptoms (Beekman et al., 1998; Beekman et al., 2000; Schulz, Heckhausen, & O'Brien, 2000; Viney & Westbrook, 1981). However, it is important to mention that, via their influence on neurochemical mechanisms, certain illnesses can lead directly to depressive symptoms. Stroke, Alzheimer's disease or Parkinson's disease are among such illnesses (Eastwood, Rifat, Nobbs, & Ruderman, 1989; Cummings, 1992). But, more typically, illness leads indirectly to depressive symptoms through functional disability. In fact, evidence accumulates to suggest that functional disability constitutes a vital link between physical illness and psychological distress (e.g. Dent et al, 1999; Downe-Wamboldt & Melanson, 1995; Kennedy et al., 1989; Murphy, Dickens, Creed, & Bernstein, 1999; Turner & Beiser, 1990; Williamson & Schulz, 1992). For example, in a cross-sectional study with geriatric patients suffering from various illnesses and reporting on pain, functional disability and depressive symptomatology, pain and illness directly impacted functional disability and functional disability directly influenced depressive symptoms (Williamson & Schulz, 1992b). Moreover, the impact of illness severity on depressive symptoms was influenced by the extent to which patients were no longer capable of performing

their usual activities. Based on these results, Williamson and Schaffer (2000) have proposed an activity restriction model of depressed affect. Their model stipulates that activity restriction mediates the link between physical illness and depressive symptomatology. The authors have gathered additional support for their activity restriction model of depressive symptoms in other medical conditions using both cross-sectional and longitudinal designs (see Williamson & Shaffer, 2000).

According to a cross-sectional clinical survey conducted by Steffens, Hays and Krishbnan (1999) among a sample of 211 older patients diagnosed with major depression, severity of depressive symptoms appeared more related to the performance of instrumental activities of daily living (IADL), for example, driving the car, doing grocery shopping, preparing meals, than to the more basic activities of daily living (ADL), such as getting out of bed, sitting down, getting up, eating, bathing. The relationship between functional disability and depressive symptoms may be bidirectional. For instance, Ormel, Rijsdijk, Sullivan, van Sonderen and Kempen (2002) conducted a longitudinal study of the temporal and reciprocal relationship between functional disability and depressive symptoms among 753 community-dwelling older adults with activity limitations assessed on three occasions over a two-year interval. They found that: a) activity limitations were significantly stable across the two year period, b) depressive symptoms were also stable across time, c) functional disability had a moderately strong immediate effect on depressive symptoms, d) depressive symptoms had a small effect on functional disability delayed in time (one year), and e) stable depressive symptoms (across time) were weakly related to stable activity limitations. These results suggest that changes in functional disability rapidly induce

depressive symptoms, whereas changes in depressive symptoms have a delayed and weaker impact on activity limitations. Other researchers (Bruce, Seeman, Merrill, & Blazer, 1994) have found that depressive symptomatology had an effect on functional status (depressive symptoms associated with decreased functional ability) over a 2.5 year period in high functioning community-based older adults. Similarly, Penninx and colleagues (1998) examined data from one of the Established Populations for the Epidemiologic Studies of the Elderly (EPESE) and found that over a 4-year follow-up, depressive symptoms at baseline had an impact on reduced physical performance among the total sample, including on individuals non disabled at baseline. Other studies looked at the inverse effect, that is, the impact of functional disability on depressive symptoms over time (e.g. Henderson et al., 1997; Kennedy, Kelman, & Thomas, 1990). Based on these results, there appears to be a reciprocal relationship between functional disability and depressive symptoms. Thus, physical illness and disability may lead to the experience of depressive symptoms because of the potential stress associated with activity restriction (e.g. Schulz & Williamson, 1993; Williamson & Shaffer, 2000), and depressive affect may in turn lead to further disability, because of specific depressive symptoms, such as fatigue, sleep and appetite disruptions, reduced motivation, self-neglect or inactivity, as well as non-compliance with medical treatment (Gurland, Wilder, & Berkman, 1988; Penninx et al., 1998).

A similar reciprocal relationship seems to characterize the association between functional disability and anxiety. The findings of Beekman and colleagues (1998) suggest that functional limitations associated with illness increases the risk of developing anxiety disorders. Since disability represents a threat to one's self, it can evoke anxiety and stimulate the desire to adapt

(Wylke & Mion, 1990). Physical illness and its limitations may lead to amplification of anxiety with its uncertainty and unknown and in turn, anxiety may lead to greater disability (de Beurs et al., 1999). Anxiety has been suggested to be particularly intense and relevant at the beginning of the disablement process, once the illness is discovered and uncertainty about its course and consequences arise (Schulz et al. 2000). However, little is known to date in regards to the evolution of anxiety related to functional disability as well as its long-term consequences (Schulz et al., 2000).

Numerous psychological consequences can be associated with disability. A study conducted by Revenson and Felton (1989) suggests that illness-related disability is associated with lowered acceptance of illness and increased negative affect. Some researchers have found that severely disabled elderly people reported higher level of psychological distress and lower psychological well-being in comparison to other older adults without disability (Reich, Zautra, & Guarnaccia, 1989; Zautra, Maxwell, & Reich, 1989). More specifically, higher levels of anxiety, suicidal thoughts, marked feelings of despair and discouragement (Zautra et al., 1989), as well as higher levels of depressive symptoms, less positive affect and lower self-esteem (Reich et al., 1989) have been reported by functionally disabled older adults. Feelings of helplessness (Viney & Westbrook, 1981) and hopelessness (Reich et al., 1989) have also been described as possible consequences of functional disability experienced by older adults compared to individuals not disabled.

Osteoarthritis as a cause of functional disability

Osteoarthritis (OA) is a chronic medical illness that is likely to produce functional

disability. In fact, OA is considered the most common form of arthritis in the elderly that can cause activity restriction (e.g. Badley, 1995; Burke & Flaherty, 1993; Hochberg, 1984).

Definition of OA. Osteoarthritis, also known as degenerative joint disease, hypertrophic arthritis, traumatic arthritis, osteoarthrosis (Minugh, 1982) and «wear and tear» disease (Garner & Kinderknecht, 1993), is a degenerative joint disease characterized by mechanical alterations in the joint (Buckwalter & Martin, 1995; Garner & Kinderknecht, 1993). It leads to a gradual and insidious deterioration of the protective cartilage, the tough elastic material that cushions the ends of the bones (Garner & Kinderknecht, 1993). Usually, some inflammation occurs as the cartilage breaks down (Bienenstock & Fernando, 1976; Garner & Kinderknecht, 1993). Once the cartilage has started to sustain damage, muscles and other tissues (i.e. tendons and ligaments) are forced to work in a manner they were not meant to, and since tissues are composed of nerve cells, they can sense pain, unlike cartilage. With time, parts of the cartilage may wear away completely, leaving the bones to rub against one another thus increasing the pain (Garner & Kinderknecht, 1993). The knees and hips are the joints most affected and incapacitated by OA (Blixen & Kippes, 1999; Felson et al., 1987; Felson, 1990; Garner & Kinderknecht, 1993; Slemenda, 1992).

Osteoarthritis is characterized by symptoms such as pain, stiffness (Buckwalter & Martin, 1995; Regan,1990; Schumacher, 1988), swelling and joint deformity (Buckwalter & Martin, 1995; Schumacher, 1988). Pain is considered a major and persistent symptom of OA (Buckwalter & Martin, 1995; Keefe et al., 1987). Osteoarthritic pain is described by patients as being dull and aching, sometimes accompanied by muscle spasms in more advanced OA

(Buckwalter & Martin, 1995; Wigley, 1984). It can be concentrated in one joint or spread through the entire body (Gold, 1994). Pain can be exacerbated by activity and relieved by rest, regardless of the affected joints (Buckwalter & Martin, 1995; Wigley, 1984). However, at a higher degree of severity, OA pain can be experienced even at rest and during the night (Buckwalter & Martin, 1995; Hochberg, 1996).

Prevalence of OA. In a survey conducted by Statistics Canada in 1997, arthritis was estimated at 42% among older adults living in the community (Health Canada, 1999). In Ontario specifically, the 1990 Ontario Health Survey (OHS) revealed that arthritis was found in 31.8% of the population aged 55 and 64 years, in 39.3% of those aged between 65 to 74 years old and among 46.7% of the 75 years and above age group (Badley, Wesbter, & Rassoly, 1995). In the United States, the prevalence of moderate to severe radiographic OA of the hip and of the knee have been estimated at 1.5% among the 55-74 age group, and 15.7% of those aged 63 to 93 years old, respectively (Lawrence, Helmick, & Arnett, 1998). Some sources suggest that as much as 80% of older adults aged 75 and over, are struck by OA (Cooper, 1995; McKeag, 1992). With regard to types of arthritis, the prevalence of OA is reported to be higher than that of rheumatoid arthritis. For instance, in a Canadian study of housebound older adults suffering from arthritis, 65% had OA, while 35% had RA (Nour, Laforest, Gignac, & Gauvin, 2005). In terms of gender, women appear to be more afflicted by OA than men. Reported worldwide estimates of symptomatic OA prevalence are 9.6% among men and 18% among women aged 60 years old and above (Murray & Lopez, 1996). In Nour and colleagues' study (2005), 91% of older Canadian adults suffering from OA were women. In another Canadian study, Hawker and colleagues

(2000) stated that among Ontario residents aged 55 years and above, 52.6% of women compared to 38% of men reported a physician diagnosis of OA. Oen and colleagues (1986) also found that OA was more prevalent among women in an Inuit population of Canada (2,144 per 100,000 women compared to 1,219 per 100,000 men). Other researchers (Rossignol, Leclerc, Hilliquin, Allaert, Rozenberg, & Valat, 2003) have found that 66.2% of 10, 412 French symptomatic OA patients (mean age of 66.2 years) were women.

Consequences of OA. As mentioned earlier, OA is a prevalent chronic condition in late life and moreover, a major cause of functional disability in the older population (e.g. Blixen & Kippes, 1999; Institut de la Statistique du Québec (ISQ), 2001). For instance, "l'Enquête sociale et de santé 1998" (ISQ, 2001) found that osteo-articular problems were the most important cause of long term limitations in life activities (27% in total) of older adults living in the community. A number of consequences have been associated with OA. Pain (Buckwalter & Martin, 1995; Giorgino et al., 1994; Liang et al., 1984; Yelin, Lubeck, Holman, & Epstein, 1987) and mobility limitations (e.g. getting up, sitting down, climbing stairs, standing, walking) (Badley, 1995; Buckwalter & Martin, 1995; Keefe et al., 1987) are among the consequences of OA that can significantly disrupt routine activities. In the OHS of 1990, long term disability was a consequence of musculoskeletal disorders reported by almost half of the population aged 65 years old and above (Badley, Rassoly, & Webster, 1994). Hip and knee problems have been reported as the two most disabling joint conditions, causing high functional limitations (Blixen & Kippes, 1999; Croft, Lewis, Jones Wynn, Coggon, & Cooper, 2002; Felson et al., 1987; Felson, 1990; Garner & Kinderknecht, 1993; Öberg & Öberg, 1996; Slemenda, 1992). With regard to

gender, OA knee pain and physical disability (e.g. physical activity level, mobility, household activities and activities of daily living) were reported to be significantly higher among women than men (Badley et al., 1994; Keefe, Lefebvre, Egert, Affleck, Sullivan, & Caldwell, 2000). Data from the NHIS-SOA suggest that OA sufferers compared to non-sufferers are 2.7 times more likely to exhibit difficulty walking and twice as likely to experience functional limitation (Slemenda, 1992). In their study, Blixen and Kippes (1999) found that most Americans, aged 60 years and older, suffering from moderate to high levels of arthritis pain, needed assistance with instrumental activities of daily living such as laundry, transportation and meal preparation. Other researchers (Yelin et al., 1987) reported that because of OA, patients had difficulty performing activities in domains such as household chores, shopping and errands as well as leisure activities. Since OA is likely to lead to functional disability, various losses can be experienced, for example, the loss of professional and/or social role. It can also imply a negative view of the self, the future and the world (Friedland & McColl, 1992). Consequently, depressive and anxiety symptoms may arise, or worsen if already existent (Penninx et al., 1996). For example, knee-related disability among OA patients, aged 40 to 85 years, was associated with worrying and hip-related disability was associated with anxiety by van Baar and colleagues (1998).

DeForge and Sobal (1986) found that OA patients reporting high levels of pain and disability at the initial and last visits exhibited lower psychological well-being, less emotional and behavioral control, more health preoccupations as well as more depressive symptoms. Abdel-Nasser and colleagues (1998) even found depressive disorder, as diagnosed by DSM-III-R, in 10% of patients suffering from OA. Older adults reporting OA were also found to visit their

physician twice as often as other elders without OA (Epstein, Yelin, Nevitt, & Kramer, 1986).

With regard to quality of life, research suggests that it is particularly low among OA patients. For instance, the results of a cross-sectional study of Chinese OA patients suggested that more severe OA was associated with lower quality of life (Woo et al., 2004). Patients with severe OA were also compared with people who had had a prior arthroplasty. The results revealed that the latter exhibited higher quality of life in specific health domains: general health, physical role, vitality and mental health. Another group of researchers (Williams, Llewellyn, Arshinoff, Young, & Naylor, 1997) found that, following knee or hip arthroplasty, patients exhibited lower levels of functional disability and they reported less pain as well as less stiffness. However, no changes were noticed for mental health. In another study, Hirvonen et al. (2006) compared OA patients awaiting hip or knee arthroplasty to matched controls and found lower quality of life on the dimensions of moving, sleeping, sexual activity, vitality, usual activity, discomfort and symptoms, depressive symptoms and distress among the OA patients. In summary, the research literature indicate that OA and its complications seriously impact quality of life.

The Links between functional disability and psychological outcome: Appraisal and coping

In the previous section, OA was introduced as a prevalent and chronic health condition among older adults, limiting those afflicted by it in their usual activities. Its disabling effects were also discussed. In the present section the focus will be on variables potentially facilitating adaptation to functional disability. Other than disability characteristics (i.e. severity, duration), other variables such as sociodemographic factors (e.g. age, education, income and marital status)

may play an important role in adaptation to functional disability. For instance, with respect to the age factor, older adults seem to be more accustomed to pain and disability because they experience them more frequently and to a greater extent than younger individuals (e.g. Ferrell, 1991). Income may also influence adaptation to functional disability. The perception of insufficient income and insufficient financial resources has been reported to predict more activity restriction (e.g. Pincus & Callahan 1985; Williamson, Schulz, Bridges, & Behan, 1994) and more psychological distress (Schulz & Williamson, 1991). Social support appears to be another important psychosocial factor in the prediction of adaptation to functional disability. For example, perceived social support and satisfaction with social support have been associated with less activity restriction (Williamson, 2000b; Williamson et al., 1994) and less psychological distress (Brenner et al., 1994; Williamson & Schulz, 1992b).

Other personal characteristics such as cognitive appraisal (e.g. perceived control) as well as coping strategies may influence to what extent physical disability is distressing (e.g. Gurland et al., 1988). Lazarus and Folkman's (1984) theory of coping with stress, underlines the importance of appraisal and coping in the process of adaptation to stress. In the following sections, the notion of stress within the context of Lazarus and Folkman's theory will be defined, followed by an elaboration of the role of appraisal (emphasizing secondary appraisal and the notion of perceived control) and coping in the process of adaptation. Another stress and coping process model proposed by Moos and Schaefer (1993) will also be presented because of its pertinence to acute and chronic stressors. The role of perceived control and coping in the

relationship between functional disability due to OA and psychological outcome will be highlighted.

Stress

From the standpoint of Lazarus and Folkman (1984), stress is defined as a relationship involving a person and his/her environment that strains or exceeds the individual's capabilities and that negatively affects his/her well-being depending on the individual's appraisal. Stress is conceived in a relational manner, which differs from other approaches defining stress either as a stimulus (i.e. stressor), as a product of a psychological struggle focusing on personal needs, goals or beliefs, or as a response to perceived threat, such as physiological symptoms (e.g. increased heat beat). Within Lazarus and Folkman's framework, stress is neither part of the individual nor the environment; rather it is part of the relationship between a person and the environment.

Appraisal

Cognitive appraisal, as defined by Lazarus and Folkman (1984), consists of the process by which an individual categorizes and evaluates the meaning or significance of a stressful event. According to Lazarus and Folkman (1984), there are two types of appraisal: primary and secondary. The authors specify that the terms primary and secondary do not imply that one is more important than the other or that one precede or follow the other in time. Primary appraisal refers to the perception of the relevance of the situation to the individual's values, goals, and beliefs about the self and the world. The three types of primary appraisal are: harm/loss, threat and challenge (Lazarus & Folkman, 1984). When a stressful encounter is being appraised as a harm/loss, some damage has already been experienced. For example, in the midst of an

incapacitating illness, loss of employment and/or mobility limitations may have been experienced. A stressful event can also be perceived as the possibility of eventual damage occurring. The individual then anticipates future harm or loss. This represents the appraisal of threat. Challenge consists of another way of perceiving a stressful situation. Perceived challenge means potential gain or mastery for knowledge, skills and personal growth. It can be viewed as an invitation to be «put to the test». Just like a threat, a challenge takes place in the future (Lazarus, 1999). Threat and challenge appraisals imply a notion of uncertainty about what is going to happen. However, as opposed to threat, challenge suggests adaptation, the feeling of positive emotions rather than negative emotions experienced with a perceived threat (Lazarus & Folkman, 1984). Although independent, threat and challenge can co-occur, particularly in anticipation of a stressful event (Folkman & Lazarus, 1985). The relationship between threat and challenge can also change as a situation evolves (Lazarus, 1999). The situation might have first been appraised as more threatening than challenging but then, with coping efforts, comes to be perceived as a challenge rather than a threat. Just as threat and challenge appraisals can co-occur, the perception of harm/loss can have implications for the future and therefore include components of threat (Lazarus, 1999). In summary, the appraisal of challenge constitutes a positive experience whereas the appraisal of threat and loss leads to negative experiences.

Primary appraisal is influenced in part by personal factors, such as beliefs about possible control over a stressful event of personal importance (Folkman, 1984). A belief about perceived control implies an appraisal of the extent to which a specific situation is under one's control (Folkman, 1984). This type of belief about situational appraisal of control is part of secondary

appraisal (Folkman, 1984). More specifically, secondary appraisal is the process by which cognitive evaluation about the situational demands is made along with an appraisal of the availability of personal coping resources and options to deal with the stressful situation (Folkman, 1984). This form of evaluation is of importance when encountering a stressor because it can influence the outcome by assessing what can be done, if anything can be done. In other words, secondary appraisal is an evaluation of the coping resources available, the probability that a specific coping strategy will achieve what is expected, and the probability of being able to apply that specific strategy effectively (Lazarus & Folkman, 1984; Lazarus, 1999). Perception of situational control appears to be an important part of secondary appraisal (Folkman, 1984; Lazarus & Folkman, 1984).

Primary appraisals and secondary appraisals interact with one another to influence outcome. For instance, the appraisal of challenge (primary appraisal) is more likely to occur when the individual holds a sense of control (secondary appraisal) over the stressful event (Lazarus & Folkman, 1984).

Notion of control

The notion of control appears to play an important role in psychological functioning. It has been applied to various issues across the life course as well as cultures (Schulz & Heckhausen, 1999). In the literature, various concepts are used in reference to control. Terms such as personal control, sense of control, locus of control (external or internal), mastery, helplessness, efficacy, illusory control, primary control and secondary control, just to name a few, have all been applied to the notion of control (Skinner, 1996). Confusion tends to arise

when a term such as control, is used to refer to different constructs. For example, the notion of control when referring to perceived control is different from that of primary control and secondary control. Perceived control is defined as the extent to which an individual considers personal life events as being under his/her control (Kempen, van Sonderen, & Ormel, 1999). It consists of a self-evaluation of one's capacity to deal with environmental demands (Arbuckle, Pushkar, Chaikelson, & Andres, 1999). In contrast, primary and secondary control are considered to be directly related to perceived control, as potential consequences, more specifically as behavioral and cognitive efforts applied to deal with stressful events (Skinner, 1996; Schulz & Heckhausen, 1999). Primary control consists of coping strategies aimed at the external environment and is problem-oriented, often employed first when threat to control is perceived (Heckhausen & Schulz, 1995). If primary control fails, secondary control is usually attempted to compensate for the loss and to increase existing levels of primary control. It consists of coping strategies directed inward and characterized by cognitive processes. In sum, control appraisals (i.e. perceived control) are cognitive in nature, while control as a coping process (i.e. primary and secondary control) consists of cognitive and/or behavioral attempts to gain or reestablish control in a stressful event, as a way of coping (Folkman, 1984).

There is also ambiguity in the measure of control in the literature (Skinner, 1996). Some studies measure control with single items, others with standardized scales of control, while others use a combination of items originating from existing instruments of control (Skinner, 1996). Since the term control has been used to refer to different constructs and different methodologies of measuring control have been used, reviews on control conclude that results about control are

inconclusive because of inconsistent and even contradictory results (Skinner, 1996). In order to better understand the importance and extent of control, a need for more specificity about which aspect of control is being examined as well as the use of appropriate control measures, based on which aspect of control is to be measured, is warranted in further research (Skinner, 1996).

Coping

Within Lazarus and Folkman's framework of stress, appraisal and coping theory, coping consists of the cognitive and behavioral efforts applied in order to manage environmental and personal demands (Lazarus & Folkman, 1984). Their concept of coping takes a process-oriented perspective where cognitive and behavioral efforts change constantly because of frequent evaluations and reevaluations of the relationship between the person and his/her environment. Coping as a process occurs in the context of a specific stressful situation rather than a general way of dealing with various stressors. Changes may originate from coping efforts aimed at altering the environment (external) or aimed at altering one's view of the situation (internal) (Lazarus & Folkman, 1984).

Another way of conceptualizing coping implies the notion of stability, disposing the individual to deal with various stressors in a common fashion (e.g. Buntrock & Reddy, 1992; Carver, Scheier, & Weintraub, 1989). To date, existence of a consistent method of coping with a wide range of life events has not been well demonstrated in research. Only weak or nonsignificant relationships have been established between measures of coping dispositions and specific coping behaviour (e.g. Carver & Scheier, 1994; Cohen & Lazarus, 1973; Hoffman, 1970; Lazarus & DeLongis, 1983). Because of the failed attempt by prior research to predict how

people will react over time or across a variety of stressful events, coping will be addressed as a process rather than a disposition, trait or style.

Taxonomies of coping strategies

Different approaches have been used to classify coping strategies. Lazarus and Folkman's taxonomy of coping strategies as well as Billings and Moos classification of coping strategies will be described.

Lazarus and Folkman's taxonomy of coping strategies. Folkman and Lazarus (1980) have divided coping strategies in two groups, problem-oriented coping strategies and emotion-focused coping strategies. Problem-oriented coping strategies are viewed as active attempts aimed at confronting and changing the problem. Such strategies focus on external change. Emotion-focused strategies refer to dealing indirectly with the problem, through more passive ways, such as emotions. The attention is more focused on an internal change, taking place within the individual. They identified eight coping strategies: a) confrontive coping, seeking social support, planful problem solving and planning classified as problem-focused coping, b) distancing, self-control, accepting responsibility, escape-avoidance and positive reappraisal categorized as emotion-focused coping. They suggest that problem-focused strategies are more adaptive when the situation is perceived as being changeable, whereas emotion-focused strategies appear to be more useful when the situation is appraised as being unchangeable (Folkman & Lazarus, 1980).

Billings and Moos's taxonomy of coping. Billings and Moos (1984) have proposed an alternative approach to Folkman and Lazarus (1980)'s taxonomy of coping. They distinguish

between approach coping, where the person is moving towards the problem and avoidance coping, where the person is moving away from the problem. Even though approach strategies have been referred to problem-oriented strategies and emotion-focused strategies have been considered to be synonymous with avoidance strategies (Folkman & Lazarus, 1980), some differences exist between these concepts. Firstly, to consider emotion-focused coping as equivalent to avoidance coping is misguided since it does not take into account the ways of dealing with emotions that implicate direct confrontation with the problem (Belding, Iguchi, Lamb, Lakin, & Terry, 1996). For instance, positive reappraisal, that is changing one's view of the problem or one's priorities in association with the problem, is part of emotion-focused coping. However rather than moving away from the problem, it is a way of moving towards the problem. Secondly, when using problem-oriented coping and emotion-focused coping categories to classify strategies, ambiguity can arise as to whether a specific strategy is problem-oriented or emotion-focused, when intent is not known (Savoie, 1999). For example, when dealing with illness, the same action, for instance approaching a health professional to talk, could be classified as either problem-oriented or emotion-focused, depending on the individual's intent. If the individual is seeking information, the strategy can be classified as problem-oriented but if the intent is to get emotional support, then the behaviour can be categorized as a form of emotion-focused coping. The use of approach and avoidance taxonomy does not require details about the intent of the person applying the coping strategy, thus reducing assumptions on the researcher's part (Savoie, 1999).

Empirical findings appear to favor an approach/ avoidance taxonomy of coping over problem-oriented/emotion-focused taxonomy. Frederikson and Dewe (1996) tried to reproduce the categorization of coping within a problem-focused and emotion-focused framework, but they found that the items best represented avoidance and approach coping. In addition, they found that approach and avoidance coping, in contrast to problem-oriented and emotion-focused coping, offer the possibility to classify both passive and active coping as either avoiding or approaching the problem encountered. Other researchers have adopted similar positions when examining the structure of coping (Belding et al., 1996; Hilton et al., 1994). Moos and Schaefer (1993) have refined the initial approach/avoidance classification by subdividing coping based on the type of effort: behavioral or cognitive. This provides four coping categories: behavioral approach (e.g. seeking information, problem solving), cognitive approach (e.g. positive reappraisal, logical analysis), behavioral avoidance (e.g. giving up) and cognitive avoidance (e.g. denial) (Moos & Schaefer, 1993). In general, people who use approach-type coping strategies tend to adapt better to life stressors and to experience less psychological distress, whereas the use of avoidance-type coping is related to less adaptation and higher levels of psychological distress (Moos & Schaefer, 1993).

Adaptation process in chronic illness

In the same vein as Lazarus and Folkman (1984)'s general theory of stress and coping, Moos and Schaefer (1993) have proposed a theoretical framework of the adaptation process in acute and chronic life events, such as chronic illness. Their model takes into account how personal and social resources, as well as characteristics of a stressful event, and one's appraisal

of the situation, can impact on the selection and effectiveness of coping strategies when confronted with severe and chronic life difficulties (Holahan, Moos, & Bonin, 1999; Moos & Schaefer, 1993). The conceptual model consists of five components: a) environmental system; b) personal system; c) life crises and transitions; d) cognitive appraisal and coping response; e) health and well-being. The first component, the environmental system, includes ongoing life stressors, such as chronic physical illness, as well as social resources, for example, family support. The second component, the personal system, refers to sociodemographic factors (e.g. marital and financial situations) as well as other personal characteristics such as self-confidence, past difficulties and coping experiences. These environmental and personal factors are believed to affect the third component, the life crises and transitions to which the person is confronted, for example, activity restriction due to an illness. These factors can jointly influence physical health and psychological outcome (e.g. anxious and depressive symptoms) through cognitive appraisal (e.g. perceived control) and coping responses (approach and avoidance), either directly or indirectly. Like Lazarus and Folkman (1984), Moos and Schaefer (1993) suggest reciprocal relationships among the different variables involved in the coping process. For example, one can imagine that, just as perceived control can influence coping strategies used to deal with a stressor, such as arthritis-related activity restriction, these coping strategies could in turn, influence the degree to which a sense of control over activity restriction is being experienced. Furthermore their theory suggests that just as personal factors, environmental factors, perceived control and coping can impact on psychological adjustment, which in turn can also alter personal and environmental factors, as well as perceived control and coping.

Although Moos and Schaefer's (1993) theory of the stress and coping process is similar to that of Lazarus and Folkman (1984), it offers some advantages. It has been conceived for more severe and chronic life stressors. It takes into consideration personal factors (e.g. demographic characteristics) and environmental factors (e.g. social resources and stressor characteristic) in the adaptation process (see Figure 1). Its classification of coping is more distinctive, with four possible classifications (cognitive approach and behavioral approach, as well as cognitive and behavioral avoidance).

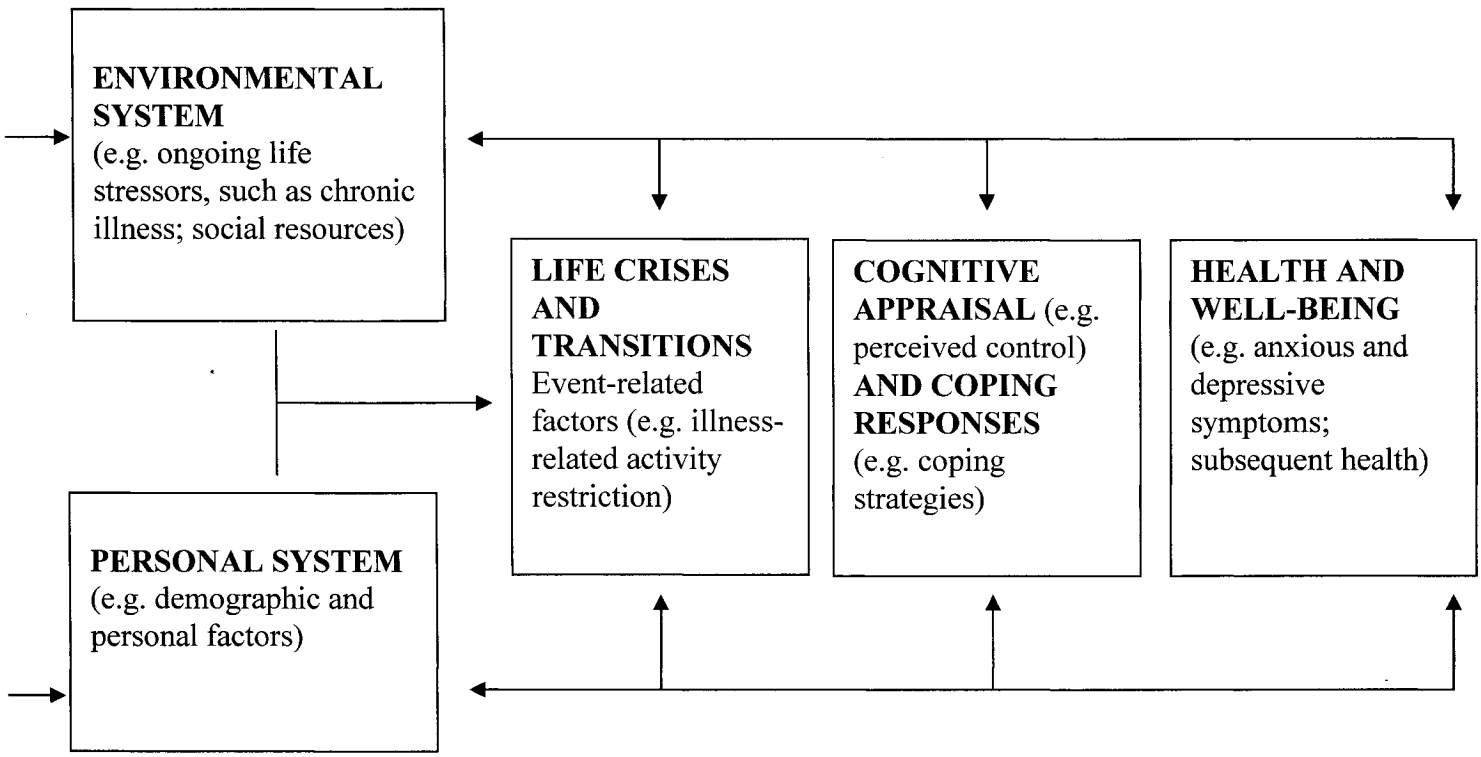

Figure 1. The stress and coping process theoretical framework proposed by Moos and Schaefer (1993).

Perceived control and coping strategies in physical illness

In this section, the potential usefulness of perceived control and coping strategies in the aftermath of physical illness will be addressed.

Perceived control in physical illness. Experiencing a sense of control in one's life has been reported to be a significant predictor of physical and psychological well-being (e.g. Baltes & Baltes, 1986, Schulz & Decker, 1985; Seligman, 1975; Thompson & Spacapan, 1991). Moreover, experiencing perceived control is considered an important part of coping and adaptation in the context of stressful events, such as physical illness (Lazarus & Folkman, 1991; Seligman, 1975; Taylor, 1983). People living with chronic illness, such as arthritis, often find themselves confronted with gradual losses in different aspects of their lives, for example, an increased loss of independence due to pain, functional limitations in their ability to take part in usual occupational and recreational activities (Baltes & Baltes, 1990; Thompson & Kyle, 2000). In such circumstances, some people may come to develop a lack of perceived control (Keefe, Smith, Buffington, Gibson, Studts, & Caldwell, 2002). Lower perceived control can also result from a diminished sense of autonomy itself partly attributable to the need for medical and personal care (Thompson & Kyle, 2000).

Old age is often accompanied by declining health problems, chronic illness and activity restriction. This being said, it appears that older adults' sense of personal control does not differ significantly from that of middle-aged and younger adults (Lachman & Weaver, 1998). This suggests that, even when confronted with illness-related losses, a sense of personal control over one's life is possible, and can in fact be beneficial. For example, older adults in a residential care

setting who reported less helplessness (less perceived lack of control) experienced greater self-acceptance and well-being (Schanowitz, 2003). Another study with RA sufferers also found that higher perceived control was related to more positive psychological adjustment (Chaney et al., 1996). Interestingly, research examining the relationship between severity of illness and perceived control found that perceived control was as beneficial, if not more so, for people faced with more severe stressors (e.g. Chipperfield & Greenslade, 1999; Helgeson, 1992; Thompson, Sobolew-Shubin, Galgraith, Schwankovsky, & Cruzen, 1993). In the midst of adversity, believing in one's ability to exert control or to improve certain aspects of the stressful situation seems adaptive (Thompson & Kyle, 2000). Compensating for a lack of control over health stressors by feeling successful in other areas of functioning appears to be another way of promoting adaptation (Baltes & Blates, 1986). Hence, perceived control is believed to be a better predictor of functioning than actual control (Averill, 1973). The belief of control, in itself, appears to be a key element in adaptation to a stressful event, such as physical illness and its consequences.

Numerous studies have looked at the effect of perceived control on psychosocial well-being in medical populations (see Thompson & Kyle, 2000). Despite differences in methodology and medical populations examined, the vast majority of the studies indicated that perceived control was associated with better psychosocial outcome or better emotional well-being. The extent to which perceived control was associated with positive or negative outcome appeared to depend, in part, on the aspect of the illness over which control was perceived (Thompson & Kyle, 2000). When a sense of control was not possible by avoiding or terminating the

threatening event (e.g. illness), finding ways to ameliorate, avoid or handle certain consequences associated with that stressor was reported to be helpful in gaining or maintaining a sense of control (Thompson et al., 1993). These researchers found that cancer patients who reported a sense of control over their emotions and their symptoms experienced significantly less depressive and anxious symptoms. Moreover, those with more physical limitations because of cancer had greater psychological adjustment if they had a strong sense of personal control over their emotions and symptoms. In another cancer study conducted by Newsom, Knapp and Schulz (1996), perceived control over the reoccurrence of cancer was found to have positive effects, while perceived control over the onset of cancer was associated with more depressive symptoms. In the context of rheumatoid arthritis (RA), with patients experiencing severe symptoms, a personal sense of control over their symptoms was related to less depressive symptoms whereas a perception of control over the course of illness was related to greater negative mood (Affleck, Tennen, Pfeiffer, Fifield, & Rowe, 1987). People believing they could manage the day-to-day symptoms of their illness were better off that those perceiving control over the course of illness. These results could possibly be explained by the fact that the course of RA is characterized by unpredictability and periods of exacerbation and remission of related symptoms (e.g., Little, 1982; Weiner, 1975). Based on these results, the usefulness of perceived control seems to depend in part on the stressor to which it is applied, being more useful when pertaining to illness symptoms rather than to onset or course of illness.

In the context of arthritis, helplessness, in other words lack of perceived control, was found to play a mediating role in the relationship between the disease severity of RA and

depression (Smith et al., 1990). Furthermore, the results of this four year follow-up study revealed that baseline helplessness was still significantly associated with higher depressed mood 4 years later (Smith, Chirstensen, Peck, & Ward, 1994). Another longitudinal study conducted by Schoenfeld-Smith and colleagues, (1996) reported that disease activity among RA sufferers influenced helplessness directly and that, in turn, helplessness exhibited a direct impact on psychological outcome. Similar results were also found by Schiaffino and Revenson (1992), where RA sufferers who expressed lower perceived control over their illness and who attributed the cause of a recent symptom flare to a permanent personal attribute experienced more depressive symptoms. The results of these studies suggest that lower perceived control in RA is associated with depressive symptoms, however, it remains unclear how these findings generalize to OA populations (Keefe et al., 2002).

In stress and coping theories (e.g. Lazarus & Folkman, 1984; Moos & Schaefer, 1993), perceived control has been related to coping strategies in the adaptational process. For example, when perceived control over a stressor is experienced, people tend to initiate action, try to make changes to obtain better outcomes and persist in the face of adversity (Ross & Mirowsky, 1989; Skinner, 1996). Believing in one's ability to influence health outcomes also tends to be associated with actions such as seeking health information and using health promoting behaviors (Shupe, 1985; Thompson & Spacapan, 1991). A perception of control over one's situation appears to be beneficial in the sense that it changes the meaning of the experience (Thompson & Kyle, 2000). In contrast, negative expectations and beliefs about one's ability to exert control have been related to helplessness, more passivity (e.g. diminished efforts and activity),

withdrawal and escape from the stressful event (Skinner, 1996). In that sense, coping appears to represent the junction between control beliefs (taking into consideration other possible personal resources, such as social and financial) and physical/psychological health. Thoughts and behaviors aimed at dealing with the stressor are said to be influenced by control beliefs (Smith, Wallston, & Dwyer, 2003). For example, one's beliefs of being able to manage arthritis successfully may translate into behavioral and cognitive efforts (coping strategies) to actively maintain one's way of life, just as a personal sense of arthritis helplessness may be expressed in more passive and destructive ways of thinking and behaving (e.g. staying in bed all day, denying the illness) (Smith et al., 2003).

Coping strategies in physical illness. The usefulness of coping strategies in the adaptational process has been studied across age groups and contexts, including illness. Roesch and Weiner (2001) conducted a meta-analytic review of coping with physical illness in 27 cross-sectional or longitudinal studies (22 published journal articles and 5 dissertations) which met the following research criteria: a) focusing on physical illness, b) having at least one attributional variable (locus, stability and controllability), c) having one variable measuring coping strategies, which was illness specific and, d) using measures of illness-specific attributions and coping strategies. The studies included illnesses such as: infertility, diabetes, heart diseases, myocardial infraction, spinal cord injuries, cancer, burn patients, blood pressure, chronic headaches, Parkinson's disease, rheumatoid arthritis, perinatal complications, renal failure, AIDS and herpes. The authors of the review divided coping strategies into components (see Figure 2) and classified coping strategies reported in the studies reviewed. Some coping strategies were

categorized in more than one coping component. Positive psychological adjustment was characterized by positive affect and normative functioning. Negative psychological adjustment included negative affect, distress, depression, anger and tension. The negative psychological adjustment indicators were transformed (reverse scored) to generate a two-dimension psychological adjustment, ranging from negative to positive (higher scores indicating better psychological adjustment). The results suggest that controllability over illness stressor had an indirect effect on psychological adjustment through approach coping (in general), cognitive approach coping and emotion-focused coping. Higher perceived control over illness stressors was associated with the use of approach coping, cognitive approach coping and emotion-focused coping, which in turn was related to better psychological adjustment. As for the relationship between coping and psychological outcome, they found that the approach coping component (including all approach-type strategies), as well as the individual behavioral and cognitive approach coping components, problem-focused and emotion-focused strategies components were all positively related to psychological adjustment. Overall, the avoidance coping component (including all types of avoidant coping strategies), as well as the cognitive avoidance coping component (individually), were both negatively related to psychological adjustment. Behavioral avoidance as a single coping component did not reach significance in its relationship to psychological adjustment. In addition, there was a relationship between the frequency use of coping strategies and psychological outcome, suggesting that the more individuals used approach-type coping strategies, the better adjusted they were. In contrast, the more individuals used avoidant coping strategies, the less adjusted they seemed.

With regard to coping strategies in the context of arthritis, in general, the use of approach-type coping strategies such as active coping (efforts made to function in spite of arthritis pain; Hampson et al., 1996) and problem-solving (Blalock, de Vellis, & Giorgino, 1995) as well as cognitive coping strategies, for example, positive reevaluation (Stewart & Knight, 1991), cognitive restructuring (Parker et al., 1987), information seeking (Felton & Revenson, 1984), optimism (Downe-Wambolt & Melanson, 1995; van Lankveld, vanPad Bosh, va de Putte, Naring & van der Staak, 1994), humour (Skevington & White, 1998) and acceptance of illness (Bendsten & Hornquist, 1994) have all been associated with positive affect, better psychological adjustment and/or less depressive symptoms. Therefore they can be considered as efficient ways of dealing with arthritis-related disability. In contrast, more passive coping strategies (including wishful thinking and restricting one's functioning because of pain; Hampson et al., 1996), cognitive avoidance-type coping strategies such as escape (Burke & Flaherty, 1993; Downe-Wambolt & Melanson, 1995; Downe-Wambolt & Melanson, 1998; Long & Sangster, 1993), cognitive distortion (Smith, Peck, Milano, & Ward, 1988), denial and catastrophizing (Keefe & Williams, 1990), threat minimization (Parker et al, 1987), wishful thinking (Felton & Revenson, 1984; Long & Sangster, 1993; Parker et al., 1987), daydreaming (Downe-Wambolt, 1991; Downe-Wambolt & Melanson, 1995), as well as self-blame (Parker et al., 1987) have been related to poorer psychological adjustment, more negative affect and/or more depressive symptoms. Although there were methodological differences between studies (e.g. types of coping strategies and psychological outcomes), in general, approach-type coping strategies were

Approach – Avoidance coping	
Approach	Avoidance
Positive expectancies/optimism	Wishful thinking
Coping self-efficacy	Denial
Seeking information	Behavioral disengagement
Seeking guidance/support	Mental disengagement
Self-control	Passive coping
Positive reappraisal/reinterpretation	Relaxation
Medical compliance	Threat minimization
Planning, logical analysis	Distancing
Suppression of competing activities	Emotional discharge
Acceptance	Seeking other rewards
Problem solving	Helplessness
Cognitive – Behavioral Approach – Avoidance coping	
Cognitive Approach	Cognitive Avoidance
Positive expectancies/optimism	Denial
Coping self-efficacy	Mental disengagement
Self-control	Threat minimization
Positive reappraisal/reinterpretation	Distancing
Acceptance	Wishful thinking
Planning, logical analysis	
Suppression of competing activities	
Behavioral Approach	Behavioral Avoidance
Seeking information	Behavioral disengagement
Seeking guidance/support	Relaxation
Problem solving /behavioral	Emotional discharge
Medical compliance	Seeking other rewards
Problem-Focused and Emotion-Focused coping	
Problem-Focused	Emotion-Focused
Seeking instrumental support	Positive expectancies/optimism
Seeking information	Coping self-efficacy
Suppression of competing activities	Seeking emotional support
Medical compliance	Self-control
Planning, logical analysis	Positive reappraisal/reinterpretation
Problem solving	Acceptance
	Threat minimization
	Emotional discharge
	Wishful thinking
	Seeking other rewards

Figure 2. Taxonomy for coping components of the meta-analytic review of coping with illness (Roesch & Weiner, 2001).

related to better psychological outcomes while avoidance-type coping strategies were associated with worse psychological outcomes.

Relationship between perceived control, coping strategies and psychological outcome in arthritis

A literature review was conducted to identify studies in the field of arthritis that have focused on the relationship between perceived control and coping strategies and their impact on psychological outcome. To insure complete coverage of all relevant studies, a computer search with the tools PsycINFO and Medline was conducted. The key words were: "arthritis" or "rheumatoid arthritis" or "osteoarthritis"; "perceived control" or "perception of control" or "personal control" or "sense of control" or "helplessness"; "coping" or "coping strategies" or "adaptation" or "management"; "well-being" or "psychological outcome" or "quality of life" or "life satisfaction"; "depression" or "depressive symptoms"; "anxiety" or "anxiety symptoms" or "anxious symptoms". A combination of the different sub-groups was executed for publications in Medline and PsyINFO. In order to include all relevant studies in the field of appraisal of control and coping with arthritis, no age limit was fixed. The selection of the studies was not limited to any specific country; however, it was limited to English and French languages. The literature review included studies with at least one time measure. Studies carried out in public and private community residences, long term care establishments and hospital context were considered. Finally, the studies collected dealt with appraisal of control over arthritis or arthritis-related stressors (e.g. pain), coping strategies exercised in order to deal with OA or RA stressors, as well the consequences of such strategies on psychological well-being of adults. Fifteen studies were

gathered and a summary of these studies, in terms of sample, methodology and results can be found in Appendix A (Table 1).

Synthesis and limitations of existing research on perceived control and coping strategies in arthritis

Perceived control and psychological outcome in arthritis. In general, the literature review suggests that perceived control and psychological outcome are linked, higher self-perceived control being positively associated with quality of life (Burckhardt & Bjelle, 1996), life satisfaction (Hong Tak, 1998), positive affect (Smith, 2002) and psychological adjustment (higher positive affect, lower negative affect, lower depressive symptoms, greater social interactions and higher life satisfaction; Brenner, Melamed, & Panush, 1994) and negatively related to negative affect (Jordan, Lumley, & Leisen, 1998; Smith, 2002), emotional reactivity (Gignac, Cott, & Badley, 2000), depressive symptoms (Burckhardt et Bjelle, 1996; Murphy, Dickens, Creed, & Bernstein, 1999; Smith & Wallston, 1992), and anxious symptoms (Burckhardt et Bjelle, 1996; Smith, 2002). In one study, locus of control (as appraisal of control) was not related to depressive symptoms (Elkis-Abuhoff, 2002); this non-statistically significant result might have been due to the small sample size. In five studies (Barlow, Turner & Wright, 1998; Giorgino, Blalock, DeVellis, DeVellis, Keefe, & Jordon, 1994; Green, Johnson, & Melamed, 1991; Parker, McRae, Smarr, Beck, Frank, Anderson, & Walker,, 1988; Scharloo, Kaptein, Weinman, Hazes, Breedveld, & Rooijmans, 1999) the relationship between perceived control and psychological outcome was not reported. In two other studies (Chui, Lau, & Yau, 2004; Parker et al., 1988), arthritis helplessness was considered as an outcome variable.

Coping strategies and psychological outcome in arthritis. As for the links between coping strategies and psychological outcome among patients with arthritis, the results of the literature review were similar to those found in the general literature on coping in physical illness. They suggest that behavioral approach-type coping such as active coping (Smith, 2002), problem solving (Brenner et al., 1994; Giorgino et al., 1994), and information seeking (Greene et al., 1991), as well as cognitive approach-type coping strategies, for example, cognitive restructuring (Parker et al., 1988) and coping statements (Jordan & al., 1998), were associated with better psychological outcome. Cognitive avoidance-type coping strategies like wishful thinking (Brenner et al., 1994; Parker et al., 1988) and self-blame (Parker et al., 1988), as well as behavioral avoidance-type strategies (e.g. avoid situation, "let things take their course") (Murphy et al., 1999), emotion-focused coping (Hong Tak, 1998) and passive coping (e.g."taking to bed" and "restricting social activities") (Murphy et al., 1999; Scharloo et al., 1999; Smith, 2002; Smith & Wallston, 1992) were related to poorer psychological outcome. Ignoring pain was related to lower negative affect and inactivity (Jordan et al., 1998). There was no report on the relationship between coping strategies and psychological well-being in studies on self-management training of arthritis conducted by Barlow and colleagues (1998) and Chiu and colleagues (2004). This being said, an increase in cognitive symptom management, physical exercise and communication with physician, as well as a decrease in anxious symptoms were found in both studies. In addition, an increase in relaxation exercises was also found by Barlow and colleagues (1998), as well as a decrease in depressive symptoms, by Chiu and others (2004). Those gains were maintained at 6 month follow-up. It appears that educational interventions aiming at increasing

knowledge about arthritis and enhancing perceived control and coping with arthritis are associated with an increase in perceived control, more adaptive coping behaviours and thoughts and better psychological outcome. The assessment of ability to control pain was reported by Burckhardt & Bjelle (1996), but no strategy used to control the pain was indicated.

Relationship between perceived control and coping strategies. In the 15 studies examining both perceived control and coping among arthritic patients, only six (Burckhardt & Bjelle, 1996; Gignac et al., 2000; Hong Tak, 1998; Parker et al., 1988; Smith, 2002, Smith & Wallston, 1992) investigated the association between perceived control and coping. Of those six, only one (Smith & Wallston, 1992) explored the direction of the relationship between perceived control and coping and its impact on psychological outcome. In this longitudinal study, path analysis revealed that arthritis helplessness (i.e. lack of perceived control over arthritis) and passive coping influenced one another reciprocally and that passive coping impacted directly and indirectly psychosocial impairment. Other studies indicated that helplessness was negatively related to the ability to control and decrease pain (Burckhardt & Bjelle, 1996), to active coping (Smith, 2002), to cognitive restructuring, while it was as positively associated with wish fulfilling fantasy (Parker et al., 1988) and avoidance coping (Smith, 2002) among arthritic patients. As for the study conducted by Gignac and colleagues (2000), they found that perceived helplessness with regard to personal care was associated with the use of selection (e.g. performing an activity less often or limiting activities), optimization (e.g. spending more time and efforts on activities, increased planning of activities) or compensation (e.g. substitution of activity, modification to the way an activity is performed)

strategies or with receiving help. A sense of helplessness was also associated with optimization and compensation strategies or receiving help with in-home mobility. Helplessness with regard to community mobility was also reported when having to resort to selection or compensation as well as receiving help. Household activities-related helplessness was associated with the use of selection and compensation strategies. In Hong Tak's research (1998) no significant correlation was found between internal locus of control and problem-oriented coping or emotion-focused coping. No statistically significant results were also reported for the relationship between chance locus of control and both problem-oriented and emotion-focused coping strategies. None of the studies reviewed tested the interaction effect of perceived control and coping strategies on psychological outcome, i.e. perceived control combined with coping strategies.

Study design. The type of design used in most of the studies reviewed was cross-sectional correlational, with the exception of six studies (Barlow et al., 1998; Brenner et al., 1994, Chui et al., 2004; Scharloo et al., 1999; Smith, 2000; Smith & Wallston, 1992). Two of those studies examined the effects of a psychoeducational intervention for the self-management of arthritis with a single group and pre-post treatment measure (Barlow et al., 1998; Chui et al., 2004) while the remainder were correlational longitudinal in nature. One of the cross-sectional studies had a very small sample size of 32 participants (Elkis-Abuhoff, 2002). No statistically significant results were found in this study, which could be attributed to a lack of statistical power. Without longitudinal and, preferably experimental designs, causal inferences cannot be made. Even in the two studies which used a single group pre-post design (Barlow et al., 1998; Chui et al., 2004) control groups were lacking. This being said, it gives some indication of the

potential benefits of psychoeducational interventions in the management of arthritis. Although links were found between perceived control and psychological measures, coping strategies and psychological measures, as well as between perceived control and coping strategies, little is known about the direction of those relationships because of the cross-sectional and the correlational nature of most of the studies. For example, it is not possible to know if people were more likely to use avoidant-type coping strategies because they were more depressed or if they were depressed because they were using more avoidant-type strategies. The same question applies to the relationship between appraisals of control and psychological measures. For instance, did participants report a higher sense of helplessness because they were depressed or they did they feel more depressed because of higher arthritis helplessness?

Assessment of arthritis disability. In regards to the assessment of functional disability, it should be noted that few studies have controlled for the severity level of arthritis. Only five studies in total reported controlling for some aspect of arthritis severity or disability, more specifically for physical disability (Hong Tak, 1998) and functional disability (Murphy et al., 1999), for behavioral impairment and disease activity (Jordan et al., 1998) and for activity limitation (Smith, 2002). Scharloo and colleagues (1999) divided their sample into three groups with respect to severity of functional disability in order to study the relationship between disability and illness clinical variables. They found that greater functional disability was associated with longer illness duration. However, they did not report the results of the link between functional disability, coping strategies and psychological outcome with respect to their severity criterion. Gignac and her colleagues (2000) also divided their sample into groups based

on the level of disability severity (severe, moderate, mild and none) with about a quarter of their sample in each category. Research clearly suggests that the greater the disability, the poorer the psychological well-being (e.g. Bendtsen & Hörnquist, 1994; DeForge & Sobal, 1986). Since the degree of functional disability is important in the prediction of psychological outcome, it appears imperative to control for its severity level when performing data analysis.

Type of arthritis. Among the 15 studies collected, only five (Barlow et al., 1998; Elkis-Abuhoff, 2002; Gignac et al., 2000; Hong Tak, 1998; Smith, 2002) examined perceived control and coping strategies in OA populations. The remaining ten studies have focused on RA patients (Brenner et al., 1994; Burckhardt & Bjelle, 1996; Chui et al., 2004; Giorgino et al., 1994; Greene et al., 1991; Jordan et al., 1998; Murphy et al. 1999; Parker et al., 1988; Scharloo et al., 1999, Smith & Wallston, 1992). Although Barlow and colleagues (1998) and Smith (2002) did not find major significant differences between OA and RA patients, the two illnesses differ in terms of arthritis symptoms and psychological symptoms. With regard to arthritis symptoms, RA is characterized by more unpredictability as well as periods of exacerbation and remission of symptoms such as pain (e.g. Little, 1982; Weiner, 1975), whereas OA pain is reported to be exacerbated by activity and relieved by rest (Wigley, 1984). However, when more severe, OA pain can be experienced at rest and during the night (Buckwalter & Martin, 1995; Hochburg, 1996). With respect to pain, Nour and colleagues (2005) reported that housebound older OA patients appear to report higher levels of pain intensity compared to housebound older RA patients. Mason, Anderson and Mason (1989) found similar results where pain was more strongly associated with physical inactivity (lower extremity function, as measured by the AIMS)

in OA compared to RA. In contrast, Affleck and colleagues (1999), in their prospective study of daily measurement (30 days) of pain in OA and RA patients, found higher levels of self-reported daily pain among RA patients. As for daily pain coping strategies, they found that seeking spiritual support was significantly higher among RA women. Nour and colleagues (2005) also found that, among housebound older adults, those with RA consumed more medication compared to their OA counterpart. As for differences pertaining to psychological aspects, the same authors found that OA participants were less optimistic, reported lower perceived self-efficacy (in general and toward the management of their arthritis and pain effects) and that they were more likely to be severely depressed than the RA participants. Based on these findings, the generalizability of results gathered from RA patients to OA patients can be questioned. It would appear important to conduct more research in the field of OA (as a specific population) in order to study the relationship among perceived, control and psychological outcome among OA sufferers.

Assessment of control appraisal. There was inconsistency in the way appraisal of control has been assessed in the studies reviewed. Brenner and colleagues (1994), Burckhardt and Bjelle (1996), Parker and colleagues (1988), as well as Gignac and her team (2000) have defined arthritis helplessness as a lack of control over arthritis. Smith and Wallston (1992) had two concepts of control, locus of control (internal and chance locus of control) and helplessness over the course of arthritis. Giorgino and colleagues (1994) examined perceived control over leisure activities, household activities and pain. Greene and his team (1991) as well as Elkis-Abuhoff (2002) and Hong Tak (1998) have addressed the concept of control in terms of locus of control

over RA symptoms. Smith (2002) assessed internal locus of control, in general, as well as arthritis helplessness (inability to manage arthritis). Studies by Murphy and colleagues (1999), and Scharloo and colleagues (1999) looked at perception of control over arthritis in general. In another study (Barlow et al., 1998) perceived control was defined as self-efficacy in controlling pain and other arthritis symptoms.

Targets of coping strategies. The reviewed studies have examined coping strategies with regard to a variety of stressors: arthritis stressors in general (RA or OA) (Barlow et al., 1998; Burckhardt & Bjelle, 1996; Chui et al., 2004; Greene et al., 1991; Hong Tak, 1998; Murphy et al., 1999; Parker et al., 1987; Scharloo et al., 1999); specific RA-related stressors (Brenner et al., 1994); functional disability (Gignac et al., 2000); household activities, leisure activities and pain (Giorgino et al., 1994), pain (Jordan et al., 1998; Smith & Wallston, 1992); most stressful situation (Elkis-Abuhoff, 2002) or stressful event, not arthritis-specified (Smith, 2002). It cannot be assumed that people will cope similarly with different aspects of the illness. It has been indicated that coping can vary depending on the nature of the stressor to which it is applied, in arthritis population (Blalock, DeVellis & Giorgino, 1995; Giorgino et al., 1994), as well as in the general population (Mattlin, Wethington & Kessler, 1990; Perlin & Schooler, 1978).

Psychological outcome. The assessment of psychological outcome also varied across studies, different concepts and measures being used in the studies reviewed. Some have defined psychological outcome as positive and negative affect (Barlow et al., 1998), others as life satisfaction (Brenner et al., 1994; Hong Tak, 1998), depressive and anxious symptoms (Barlow et al., 1998; Burckhardt & Bjelle, 1996, Chui & Yau, 2004; Jordan et al., 1998; Scharloo et al.,

1999; Smith, 2002), depressive symptoms alone (Elkis-Abuhoff, 2002; Parker et al., 1988; Smith et Wallston, 1992), emotional reactivity (Gignac et al., 2000) or mental health in general (Green et al., 1991). Five of the six studies assessing both anxious and depressive symptoms reported results for both outcomes (Barlow et al., 1998; Burckhardt & Bjelle, 1996; Chui & Yau, 2004; Scharloo et al., 1999; Smith, 2002), whereas Jordan and colleagues (1998) combined both scores to form a negative affect variable and Murphy and colleagues (1999) reported results for depressive symptoms only.

As mentioned earlier, little is known about the evolution of anxiety in regards to functional disability. Half of the studies reviewed assessed anxious symptoms in RA and OA together (Barlow et al., 1998; Smith, 2002) or RA alone (Burckhardt & Bjelle, 1996; Chui & Yau, 2004; Jordan et al. 1998; Murphy et al., 1999; Scharloo et al., 1999). In one study, anxious symptoms were not reported (Murphy et al., 1999) and in another (Jordan et al., 1998) it was combined with depressive symptoms to form another variable, negative affect. Only two studies (Barlow et al., 1998; Smith, 2002) focused on anxious symptoms in OA populations. Newman (1996) points out that assessment of psychological well-being in patients suffering from musculoskeletal disorders has mainly focused on measures of depressive symptoms, ignoring the high levels of anxiety reported by some patients. To date, little is know about the manifestation of anxiety in association with OA-related activity restriction.

Gender differences. Many studies included both genders in their sample, in largely inequivalent proportions (Barlow et al., 1998; Chui et al., 2004; Elkes-Abuhoff, 2002; Greene et al., 1991; Gignac et al., 2000; Parker et al., 1998; Scharloo et al., 1999). Some researchers have

taken into account the possible effect of gender (Elkes-Abuhoff, 2002; Giorgino et al., 1994; Murphy et al., 1999). Four studies (Burckhardt & Bjelle, 1996; Hong Tak, 1998; Jordan et al., 1998; Smith, 2002) had a sample including women only. The literature suggests that men and women differ on psychological variables (Byrne, 1981; Creamer, Lethbridge-Cejku, Costa, Tobin, & Herbst, 1999; Dowdy, Dwyer, Smith, & Wallston, 1996; Fuentes & Cox, 2000; Keefe et al., 2000) and in their experience of illness (Ettinger et al., 1994; Keefe et al., 2000), therefore, controlling for gender or conducting same-sex studies would be important to account for gender differences.

Synthesis for the selection of study variables

The current study presents the following progressive features: a) it studies an illness (OA) which often leads to activity restriction, a significant illness-related stressor, which is known to induce psychological distress; b) it investigates perceived control and coping strategies in a population often stricken by OA-related functional disability; c) it investigates both depressive and anxious symptoms as possible outcomes of perceived control over activity restriction and coping with activity limitation; d) it explores the interactional role of perceived control with coping strategies in the prediction of anxious and depressive symptoms.

The present study targets OA because of its high prevalence in elderly people and its noted disabling effect. Furthermore, perceived control and coping strategies with regard to a specific type of arthritis stressor, activity restriction, have rarely been investigated in the case of OA. Most of the research on these variables has been conducted in the context of RA. Yet, as emphasized in the previous section, if OA and RA share some characteristics such as pain,

stiffness and swelling, they are reported to differ in terms of predictability of symptom manifestation (Little, 1982; Weiner, 1975), experience of arthritis pain (Affleck et al., 1999; Masòn et al., 1989; Nour et al., 2005), perceived self-efficacy (Nour et al., 2005), coping strategies (Affleck et al., 1999; Nour et al. 2005), as well as optimism and depressive symptoms (Nour et al., 2005). Although some researchers have found little difference between the two populations (Barlow et al., 1998; Smith, 2002), until further research is conducted to find similar results on a variety of pertinent variables (e.g. sociodemographic, arthritis-related stressors and psychological variables), it would seem preferable to examine these medical conditions separately.

Because perceived control appears to play an important role in the relationship between illness-related functional disability and psychological outcome, it is as been chosen as a key variable in the present study. More specifically, perceived control has been reported to influence the relationship between physical illness and psychological outcome in arthritis, with higher perceived control over RA symptoms being related to less depressive symptoms (e.g. Affleck et al., 1987; Schiaffino & Revenson, 1992), and arthritis helplessness being positively related to depressive symptoms in RA patients (Smith & Wallston, 1992; Smith et al., 1994) or to both depressive and anxious symptoms in RA and OA patients (Smith, 2002). This being said, perceived control over activity restriction, specifically, and in OA patients, has rarely been studied.

According to theory and research, coping strategies constitute another important variable in the link between illness-related disability and psychological outcome, influencing to what

extent functional disability is experienced as distressing, and thus possibly buffering its negative impact on well-being. As with perceived control, coping strategies have been related to psychological outcome in arthritis studies, with behavioral and cognitive approach-type strategies being related to better psychological outcome, and behavioral and cognitive avoidance-type strategies being positively associated with psychological distress (see Table 1, in Appendix A). Because of their apparent role in adaptation to arthritis, coping strategies have been selected as a study variable. In contrast with most previous arthritis studies, it will be examined with respect to a specific arthritis stressor, namely activity restriction.

Medical illness is known to constitute a risk factor for depressive symptoms and depressive disorders as well as for anxious symptoms and anxiety disorders; yet, anxious symptomatology has been less examined in association with physical illness compared to depressive symptomatology. Anxious and depressive symptoms have both been associated with arthritis and arthritis-related appraisals of control, yet, they have not been much examined in the field or arthritis, particularly in OA populations. It was decided to examine both anxious symptoms and depressive symptoms as outcome variables because of their prevalence in chronic illness and their negative association with quality of life.

A model including the proposed study variables is illustrated in Figure 3. This model is based on the stress and coping theory proposed by Moos and Schaefer (1993). Although this model stipulates the existence of reciprocal relationships among the variables, the investigation of such relationships will not be possible in the course of the present study because of its cross-

sectional nature. The attention will focus on how perceived control and coping strategies with regard to activity restriction due to OA relate to anxious and depressive symptoms.

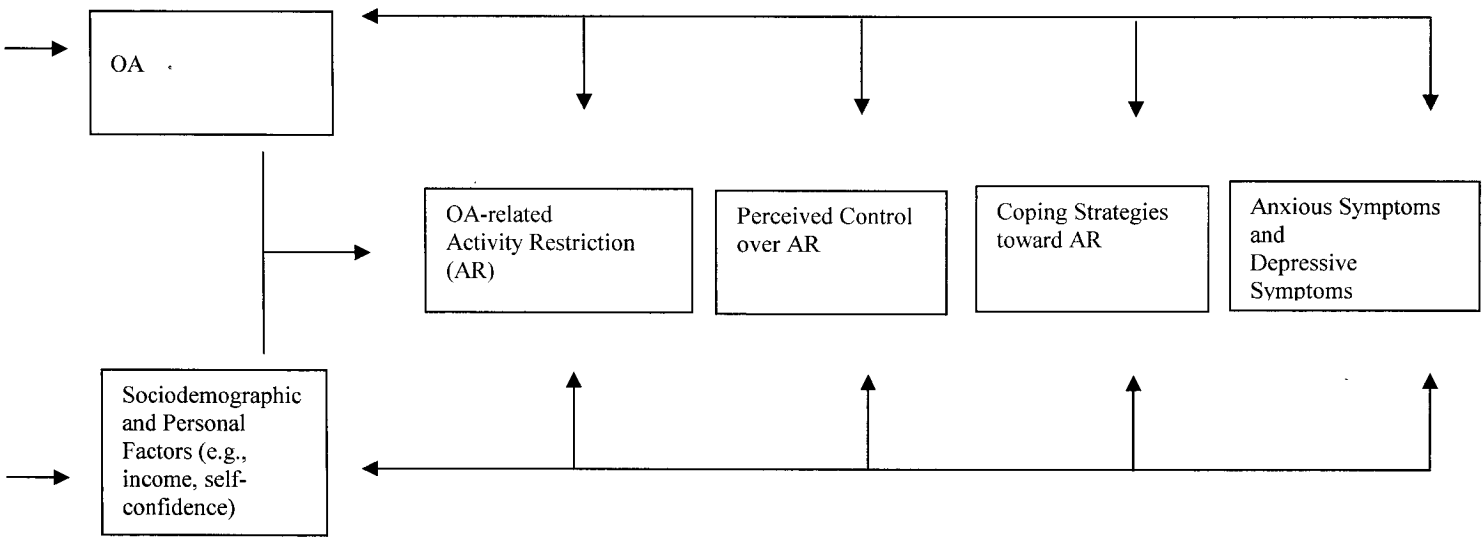

Figure 3. Adaptation of the stress and coping process framework proposed by Moos and Schaefer (1993) to the proposed study variables.

Research Questions and hypotheses of the proposed study

Research questions

1. Do appraisal (specifically perceived control) and coping strategies (approach and avoidance) predict[1] anxious and depressive symptomatology among older women experiencing functional disability due to (osteoarthritis) OA?
2. Is perceived control a more important factor than coping strategies in predicting anxious and depressive symptomatology?
3. Once appraisal and coping strategies have been taken into account, what is the added contribution of their interaction in the prediction of anxious and depressive symptoms among elderly women with OA-related activity restriction? Does perceived control interact differently with approach coping versus avoidance coping in the prediction of anxiety and depressive symptoms?

Hypotheses

Hypothesis 1

Perceived control will explain a significant amount of the variance in anxious symptoms among older women experiencing functional disability due to OA, in the sense that higher perceived control will be related to lower anxious symptoms.

Hypothesis 2

Coping strategies will account for a significant proportion of the variance in anxious symptomatology among older women exhibiting OA-related activity restriction. More

[1] As customary in regression analyses, the terms "predicted", "predictor", "prediction" will be used in this text in reference to the contribution of the selected variables in association with anxious and depressive symptoms. However, one should not conclude causal relationships given the cross-sectional nature of the study.

specifically, higher use of approach-type coping strategies and lower recourse to avoidant-type coping strategies will be associated with lower anxious symptoms.

Hypothesis 3

Among older women experiencing activity restriction because of OA, perceived control will explain a greater proportion of the variance in anxious symptoms than coping strategies. In other words, it is hypothesized that perceived control will be a more powerful predictor than coping strategies (approach and avoidance) for anxious symptoms.

Hypothesis 4

Among older women facing activity restriction due to OA, perceived control will account for a significant amount of the variance in depressive symptoms, meaning that higher perceived control will be associated with lower depressive symptoms.

Hypothesis 5

Coping strategies will explain a significant proportion of the variance in depressive symptomatology among older women experiencing OA-related functional disability. Specifically, approach-type coping strategies will be negatively associated with depressive symptoms, while avoidant-type coping strategies will be positively associated with them.

Hypothesis 6

Among older women exhibiting activity restriction due to OA, perceived control will explain a greater amount of the variance in depressive symptoms compared to coping strategies.

Hypothesis 7

Perceived control *in combination* with coping strategies will account for a significant amount of the variance in anxious symptoms, above and beyond that of perceived control and coping strategies by themselves, in older women experiencing OA-related activity restriction. Specifically, the *combination* of higher degree of perceived control on one hand, and higher reliance on approach coping and lower recourse to avoidance coping on the other will predict lower levels of anxious symptomatology, above and beyond higher perceived control, higher approach coping and, lower avoidance coping considered separately.

Hypothesis 8

Perceived control *combined* with coping strategies will also explain a significant proportion of the variance in depressive symptomatology, over and above that of perceived control and coping strategies separately, in older women presenting functional disability due to OA. In other words, higher perceived control in combination with higher levels of approach-type coping strategies and lower levels of avoidance-type coping strategies will predict lower levels of depressive symptoms, above and beyond the individual contribution of perceived control, approach coping and avoidant coping.

CHAPTER 2

Method

Participants

Participants were recruited from four orthopaedic clinics: a) Hôpital Montfort, b) Ottawa Hospital (General Campus) c) "Centre des Vallées de l'Outaouais (CHVO) de Gatineau", d) "Centre des Vallées de l'Outaouais (CHVO) de Hull". Patients awaiting a hip or knee replacement surgery (known as arthroplasty) on account of OA were targeted for this study to increase the likelihood that participants presented a high level of activity restriction. Data collection took place while patients were on a waiting list for surgery. Participants were recruited by mail with a letter informing them of the study.

The inclusion criteria were: a) being a French-speaking woman aged 60 years or older, b) living in the community, c) having been diagnosed, by a physician, with OA of the knee or/and hip, for at least one year, d) being on a waiting list for a hip or knee replacement, e) showing no sign of severe cognitive deterioration as indicated by a score of 24 or higher on the Mini-Mental State (MMSE; Folstein, Folstein & McHugh, 1975). Potential participants who had a knee or hip surgery scheduled within less than a month were excluded. The reason for this exclusion was that anticipation of upcoming surgery could have well affect appraisal (perceived control) and coping processes. Including these individuals in the study might have introduced a confound in our attempt to elucidate the relationship between appraisal and coping in activity restriction due to OA. The announcement of the upcoming surgery (in the first few weeks following the announcement or a few days or few weeks before the surgery) might have influenced the

patient's perception or management of functional limitations caused by OA.

The rationale for restricting recruitment to women for this study was based on gender differences in the prevalence of OA, on one hand, and on response to psychological measures, on the other hand. First, OA is more prevalent among women than men (e.g. Davis, Ettinger, Neuhaus, & Mallon, 1991Ettinger et al., 1994; Felson, 1990; Hawker et al., 2000; Nour et al., 2005; Weaver et al., 2003). Second, women have been found to differ in their self-report of psychological symptoms, compared to men. For instance, in the general population (Byrne, 1981), as well as in the older population (Fuentes & Cox, 2000), women reported higher depressive symptoms than men. Similar results were found in an older chronically ill population; not only did women report more depressive symptoms, they also exhibited higher anxious symptoms than men (Penninx et al. 1996). In arthritis patients, more anxiety symptoms (e.g. Creamer et al., 1999), more depression symptoms (e.g. Keefe et al., 2000) and more negative indicators of positive well-being (Dowdy et al., 1996) were reported by women compared to men. In order to limit variability on the measures, a decision was made to opt for a more homogeneous population (Cone & Foster, 1997).

Measures

Mini-Mental State Examination. The Mini-Mental State Examination (Folstein, Folstein & McHugh, 1975) constitutes an instrument to screen for impairment in cognitive functioning. It is composed of 11 items grouped into seven categories representing one of the following cognitive domains: (a) Orientation to time (5 points); (b) Orientation to place (5 points), (c) Registration of three word (3 points); (d) Attention and Calculation (5 points); (e) Recall of three

words (3 points); (f) Language (8 points); (g) Visual Construction (1 point) (Tombaugh & McIntyre, 1992). The maximum score is 30. A score of 24 and above is indicative of no cognitive impairment, while a score of 23 or less is suggestive of cognitive impairment. More precisely, a score between 18 and 23 suggests mild cognitive impairment and a score of 0-17 refers to severe impairment (Tombaugh & McIntyre, 1992). This instrument requires 5 to 10 minutes for administration (Mitrushina & Satz, 1991; Tombaugh & McIntyre, 1992).

Tombaugh and McIntyre (1992) conducted a comprehensive literature review of the psychometric properties of the instrument. Concerning internal consistency among the studies reviewed, alpha levels ranged between 0.54 and 0.98. With respect to test-retest reliability, Tombaugh and McIntyre (1992) indicated reliability coefficients for studies reporting test-retest intervals of 2 months or less in order to reduce the influence that illness-induced changes might have on reliability estimates. A total of 14 studies were reviewed for test-retest reliability. Based on the results of these studies, the reliability coefficients for both cognitively intact and impaired participants were generally in the range of 0.80 to 0.95.

Tombaugh & McIntyre (1992) reported the sensitivity and the specificity of the MMSE appraised on the basis of 25 studies using a criterion score of 23 or less. For dementia participants, in 75% of the findings, sensitivity of approximately 87% was found. Furthermore, in 70% of the studies reviewed, a total score of 23 or less on the MMSE was associated with the diagnosis of dementia in more than 79% of the cases. The authors found that the sensitivity of the MMSE varied depending on the level of cognitive impairment in the dementia groups. More precisely, the probability of obtaining a high degree of sensitivity increased with an increasing

level of impairment. When neurological and psychiatric participants were assessed with the MMSE, low sensitivity ranging from 21% to 76% was reported (Tombaugh & McIntyre, 1992). As for specificity, the majority of the studies reviewed indicated moderate to high levels of specificity ranging from 46% to 100% (Tombaugh & McIntyre, 1992). Construct validity was also evidenced in numerous studies. The MMSE was found to correlate with other cognitive screening tests at 0.70 to 0.90. Correlations were also found between the MMSE and intelligence and memory tests (see Tombaugh & McIntyre, 1992). The MMSE has also been found to correlate in a moderate to high fashion with neuropsychological tests (e.g. Trails B, WMS, digit span, story recall and word list recall. Correlations of 0.40 to 0.75 have been reported between the MMSE and ADL scales (see Tombaugh & McIntyre, 1992).

Recent research (Pangman, Sloan, & Guse, 2000) suggest that the MMSE is a reliable tool for the screening of cognitive impairment in older adults. The test-retest reliability of the MMSE was reported with a correlation above 0.90 ($p<0.001$) for a one-week test-retest and internal consistency examined at Time 1 and Time 2 revealed Cronbach's alpha above 0.80.

As for the psychometric properties of the French version of the MMSE that was used in the current study, Bravo and Hébert (1997) reported reliability with intraclass correlation coefficient (ICC) of 0.75 for the French version and 0.78 for the English version, and a test-retest reliability of 0.75 for the French version and 0.88 for the English version (90 days or less after initial testing).

Sociodemographic characteristics. Sociodemographic characteristics were assessed via a demographic questionnaire including questions about: age, marital status, education (number of

years), income (annual income), duration of osteoarthritis (number of years), medication use, and caregiving (if yes, attending to whom' needs) (see Appendix M).

Activity restriction. The Arthritis Impact Measurement Scale 2 (AIMS2) (Meenan, Mason, Anderson, Guccione & Kazis, 1992) is a self-report questionnaire specifically designed to measure health status in patients with arthritis. The AIMS2 was created after the revision of the original AIMS which included 9 scales totalling 45 items: a) mobility, b) physical activity, c) dexterity, d) social role, e) activities of daily living, f) social activity, g) anxiety, h) depression, i) pain. Of the original version, 35 items were left unchanged, 4 were revised and 6 were deleted (Meenan et al., 1992). Three new items were added to 3 original scales (one each). Moreover, three additional scales were added: arm function, work and support from family and friends. The names of the scales have also been changed, as follows: (a) mobility level, (b) walking and bending, (c) hand and finger function, (d) arm function, (e) self-care, (f) household tasks, (g) social activities, (h) support from family and friends, (i) arthritis pain, (j) work, (k) level of tension, (l) mood. Scores are standardized on a scale of 0-10, where 0 represents "perfect health status" and 10 consists of " worst possible state of health" (Pouchot, Guillemin, Coste, Brégeon, Sany, & the "Quality of Life in Rheumatology" Task Force, 1996).

The validity and reliability of the AIMS2 was tested among RA (Meenan et al., 1992; Pouchot et al., 1996) and OA patients (Meenan et al., 1992). The psychometric properties of this instrument include a test-retest reliability measured by the intraclass correlation coefficients ranging from .78 to .94 for all subscales (Meenan et al., 1992). Results were slightly different for Pouchot and colleagues (1996) with intraclass coefficients ranging from 0.65 to 0.90. In the

study conducted by Meenan and colleagues (1992), internal consistency (alpha) of the 12 scales varied from 0.72 to 0.96, with most coefficients ranging from 0.80 to 0.89. Pouchot and colleagues (1996) found similar results with their French version of the AIMS2, the Cronbach's alpha coefficients for the 12 scales varied from 0.70 to 0.90. Convergent validity was tested for the «physical» and «symptoms» components of the AIMS2, they were significantly correlated with four of the five comparisons of clinical or laboratory data (numbers of painful or swollen joints, morning stiffness, pain severity, erythrocyte sedimentation rate) (Pouchot et al., 1996). The AIMS2's adapted version of the 9 original scales of the AIMS exhibited reliability levels that were comparable with those found for the original version (Meenan, Gertman, & Mason, 1980; Meenan, Gertman, Mason, & Dunaif, 1982). Validity analyses of the AIMS2 showed that what participants designated as a problem area or a priority for improvement was significantly associated with a poorer scale score in that area on the AIMS2 (Meenan et al., 1992). Since 9 of the AIMS2 scales consist of a revision of the original scales, their validity has not been reassessed in a broad manner (Meenan et al., 1992). For the original version of the AIMS convergent validity was found with three validation measures (age, patient's perception of general health and disease activity, physician's report of functional activity, disease activity and joint count) (Meenan et al., 1980). Construct validity of the original AIMS was also demonstrated with four measures, the squared multiple correlation coefficients for those variables are: 0.84 for overall health status, 0.75 for visual analogue measures of arthritis impact, 0.66 for physician estimates of functional class and 0.61 for physician estimates of disease activity (Meenan et al., 1982).

In the current study, activity restriction was assessed via the AIMS-2. As mentioned earlier in chapter 2, Williamson and Shaffer (2000) have defined activity restriction as being the extent to which one's usual activities are limited by a major life stressor such as physical illness. The term functional disability due to illness has also been used in reference to activity restriction (e.g. Agüero-Torres et al., 2001 Newman, 1997; Williamson & Schulz, 1992; Williamson & Shaffer, 2000). Only the 4 following AIMS-2 subscales were administered for the assessment of activity restriction: mobility level (4 items), walking and bending (5 items), household tasks (4 items) and self-care (4 items).

For each subscale of the AIMS used to assess activity restriction (mobility, walking and bending, self-care and household tasks), a composite score was calculated according to Pouchot and colleagues (1996), scores ranging from 0 to 10 (a low score reflects high functioning). To obtain a global score for the functional disability or activity restriction of the AIMS subscales used, the mean of the 4 subscales' composite scores was calculated by dividing the sum of the 4 subscales by 4 (number of subscales).

Perceived control. The Stress Appraisal Measure (SAM; Peacock & Wong, 1990) was selected to assess self perceived control over activity restriction. This measure is composed of seven scales, each consisting of four items: threat, challenge, centrality, controllable by self, controllable by others, uncontrollable, stressfulness. The threat and challenge scales are used to assess one aspect of primary appraisal, perceived future harm/loss and anticipation of gain or growth, respectively. The centrality scale measures the perception of what is at stake. The scales of controllable-by-self, controllable-by-other, and uncontrollable refer to the notion of secondary

appraisal and evaluate the extent to which the situation is controllable by one's self, others or uncontrollable by anyone. The last subscale assesses perceived stressfulness of the situation. Each of 28 items on the SAM assesses appraisal about a stressful situation on a 5-point Likert scale, where participants indicate to what extent they agree with the item. Answers can vary from 1 "not at all" to 5 "extremely".

Psychometric proprieties have been reported among an undergraduate population. The results reveal the presence of internal consistency with estimates ranging from 0.74 to 0.90 in Study 1, from 0.7 to 0.9 in Study 2 and from 0.7 to 1.0 in Study 3, except for the uncontrollable scale where it was estimated at 0.51 and 0.6, in Studies 1 and 3, respectively (Peacock & Wong, 1990). The internal consistency of the controllable-by-self subscale was 0.87 (Study 1), 0.86 (Study 2) and 0.84 (Study 3). Mean inter-correlation is reported at 0.22, suggesting that the scales reflect independent appraisal dimensions (Peacock & Wong, 1990). The scales of threat and centrality were found to be significant predictors of stressfulness in all three studies accounting for over half of the variance in stressfulness (Peacock & Wong, 1990). Factor analysis conducted in Studies 2 and 3 suggests that SAM scales are relatively independent appraisal dimensions (Peacock & Wong, 1990). Results of Study 3 reveal that convergent validity is found between dysphoric mood and the SAM. Negative correlations with challenge, controllable-by-self and controllable-by-others were reported while positive correlations with threat, centrality, uncontrollable-by-anyone and stressfulness were revealed (Peacock & Wong, 1990). Scales of challenge and controllable by other were also negatively correlated with locus of control, while scales of threat, centrality, uncontrollable-by-anyone and stressfulness were

positively correlated with psychological symptoms and scale of controllable-by-others was negatively correlated with psychological symptoms (Peacock & Wong, 1990). The sub-scale controllable-by-self was negatively correlated with dysphoric mood. The subscale which is of interest in the present study is the scale labelled controllable-by-self. In the course of a personal communication with Dalton and Basevitz (2002), we learned that the controllable-by-self subscale of the SAM has been found valid among a sample of older adults with a mean age of 73 years in their study on worry, perceived control and coping. The internal consistency for this subscale was reported with an alpha of 0.82. Other Cronbach alpha coefficients have also been reported for the following subscales: stressfulness (alpha = 0.76) and uncontrollable-by-anyone (alpha = 0.86) (Dalton & Basevitz, 2002). Based on these results, the SAM appears to be a valid instrument for the measure of perceived control among older adults.

To assess perceived control over activity restriction, the scale of controllable-by-self (items 12, 14, 22, 25) was selected and applied to a specific stressful situation encountered in the past week (as chosen by each participant), where there was restriction in activity due to OA. Since there was no French version of the SAM available, the subscale of controllable-by-self was translated in French using the back-translation method, by one bilingual translator (French-English) and back-translated in English by an English (bilingual) Ph.D. Candidate in Clinical Psychology at the University of Ottawa, to ensure accuracy. No pilot study was conducted for the validation of the French translation of the controllable-by-self subscale because of time constraits and limited resources. This being said, the internal consistency of scale was comparable to that of other studies (alpha = 0.89).

Coping Strategies. Ways of coping with activity restriction was assessed with the abbreviated version of the COPE inventory which was developed by Carver, Scheier and Weintraub (1989). This instrument was designed to assess coping as both situational and dispositional. The COPE has the advantage of having been used with physically ill individuals (Bouffard & Crocker, 1992; Somerfield, Curbow, Wingard, Baker, & Fogarty, 1996). The full version of the COPE is composed of 13 scales: active coping, planning, suppression of competing activities, restraint coping, seeking social support for instrumental reasons, seeking social support for emotional reasons, focusing on and venting emotions, behavioral disengagement, mental disengagement, positive reinterpretation and growth, denial, acceptance and turning to religion. It contains 52 items which are rated on a four point Likert scale ranging from 1 (I do not do this at all) to 4 (I do this a lot). Two other scales were added to the 13 originals, humour and use of alcohol or drugs (Scheier et al., 1994). A factor analysis (Carver et al., 1989) has revealed 11 subscales, with planning and active coping loading onto one factor and instrumental and emotional social support also loading on one factor. Second-order factor analysis revealed four higher order scales: active coping, planning and suppression of activities onto one factor; seeking social support and venting of emotions formed the second factor, mental and behavioral disengagement, as well as denial composed the third factor while restraint coping and positive reinterpretation comprised the fourth factor (Carver et al., 1989). Disinger and his colleagues (1996) have yielded a fifth factor which was composed of humor and alcohol use. Belding and his colleagues (1996) have analysed a two higher-order factor structures with the use of confirmatory factor analysis. They compared two coping classifications, problem focused and

emotion focused coping versus active coping and avoidance coping. The active versus avoidant taxonomy exhibited a greater overall fit (CFI=0.94) than the problem focused versus emotion focused taxonomy (CFI=0.84).

In regards to psychometric properties, Carver, Scheier and Weintraub (1989) have found test-retest correlations for the 13 scales ranging from 0.46 for suppression of competing activities to 0.86 for turning to religion at eight week-interval, and 0.42 for behavioral disengagement to 0.89 for turning to religion with a period of six weeks interval. In general, the eight weeks interval test-retest correlations suggested self-report of coping tendencies that were relatively stable for a number of the COPE scales (planning, seeking social instrumental support, seeking social emotional support, acceptance, turning to religion, venting emotion and behavioral disengagement) with correlations above 0.6. However the low reliability found for the active coping, positive reinterpretation, restraint coping, denial and mental disengagement scales, with correlations below 0.6, suggest that the measure of those constructs was not stable across time. This low reliability might be attributable to the behavioral aspect of coping and its variability across situations (De Ridder, 1997). For the six-week interval of the test-retest reliability of the COPE scales, the reliability was acceptable to good for most of the scales, except for behavioral and mental disengagement with correlations below 0.6, which suggest that for these two scales, the measure of their respective construct was inconsistent. Internal consistency was reported with alpha coefficients ranging from 0.62 for active coping to 0.92 for turning to religion, with the exception of mental disengagement which had an alpha coefficient of 0.45. The validity of the COPE was assessed by comparing the instrument with ten personality traits, for instance,

optimism, anxiety, self-esteem and social desirability. Seven of the ten correlations were under 0.35 suggesting that the scales of the COPE differ from personality measures.

When multiple measures are being administrated, the length of time required to fill the COPE can be inconvenient (Zea, Reisen, & Tyler, 1996). Because many questionnaires were administered to an older population, a shortened version of the COPE was used. Based on previous research and psychometric properties of the COPE's scales, four scales were selected (Savoie, 1999). They cover the dual-axis coping taxonomies (approach/avoidance and behavioral/cognitive). The subscales are composed of four items each, they are: active coping (behavioral approach), planning (cognitive approach), behavioral disengagement (behavioral avoidance) and denial (cognitive avoidance). The subscale of mental disengagement was not retained as a type of cognitive avoidance because of its low reliability ($\alpha = 0.45$) (Carver & al., 1989). With respect to psychometric properties, the four selected subscales possess satisfactory internal consistencies. The alpha coefficients range from 0.62 to 0.76 for the active coping scale, from 0.79 to 0.80 for the planning scale, from 0.62 to 0.63 for the behavioral disengagement scale and from 0.68 to 0.71 for the denial scale (Carver et al., 1989; Somerfield et al., 1996). Test-retests reliabilities, over an eight week interval, were also satisfactory with coefficient of 0.56 for active coping, 0.63 for planning, 0.66 for behavioral disengagement and 0.54 for denial (Carver et al., 1989). Because advanced age has been associated with higher use of positive reappraisal (Burke & Flaherty, 1993; Hong Tak, 1998) and cognitive restructuring has been negatively associated with helplessness and positively associated with positive psychological outcome (e.g. Parker et al., 1988), it was decided to add the positive reinterpretation coping

strategy to examine its possible effects when dealing with activity restriction. For this purpose we included two of the four items making up the COPE's positive reinterpretation subscale that loaded above the .30 cut-off suggested by Gorshuch (1983). Those two items were: "I look for something good in what is happening" (0.75) and "I try to see it in a different light, to make it seem more positive" (0.59) (Carver et al., 1989). Positive reinterpretation was considered a form of cognitive approach coping (Roesch & Weiner, 2001). In total five subscales of the COPE were used to assess coping strategies: active coping, planning, and positive reinterpretation, as types of approach coping, as well as behavioral disengagement and denial, as types of avoidance coping.

Symptoms of anxiety and depression. Anxious symptoms and depressive symptoms were assessed with the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). This self-report instrument was designed to assess anxious and depressive symptoms among medically ill individuals. The HADS has the advantage of assessing depressive and anxious symptoms independently of physical symptoms by removing the somatic symptoms which could be attributed to depression, anxiety or physical illness. The HADS consists of a 14-item self-report questionnaire divided in two sub-scales, a 7-item scale evaluating symptoms of anxiety and a 7-item scale assessing symptoms of depression. Participants answer on a four-point Likert-type scale (from 0 to 3) how they have been feeling over the past week. A minimum score of 0 and a maximum score of 21 can be obtained for each subscale. For both constructs, a score of 7 or less is considered in the normal range, while a score between 8 and 10 is considered "borderline" or doubtful and a score of 11 or more reflects a probable disorder of anxiety or

depression (Zigmond & Snaith, 1983).

The HADS can be administered orally or in writing and requires little time (5-10 minutes) on the part of the participants. In addition, this instrument has been validated among elderly individuals (Lam, Pan, Chan, Chan & Munro, 1995; Spinhoven, Ormel, Sloeker, Kempen, Speckens & Van Kemert, 1997; Wattis, Davies, Burn, McKenzie, Ross, & Brothwell, 1994).

A group of researchers, Bjelland, Dahl, Tangen, Haung and Nechelmann (2001) have performed an updated literature review on the validity of the HADS. In regards to the factor structure of the HADS, 19 studies were considered. Among those, 11 studies found two distinct factors, five other studies revealed a three-factor structure, while two more identified a four-factor structure. Bjelland and colleagues (2002) conclude that, although a few studies have found a three-factor or four-factor structure, their review supports the two-factor structure of the HADS. As for the discriminant validity, 21 studies review by Bjelland et al. (2002) reported Pearson correlation coefficients between the two subscales of the HADS. In seven studies among nonpatient participants, the correlations ranged between 0.49 and 0.74 (mean of 0.59). In twelve of the studies reviewed, the correlations between the HADS-anxiety scale and the HADS-depression scale varied from 0.40 to 0.64 (mean of 0.55) among medical patients. Two other studies which examined psychiatric patients reported a correlation of 0.56.

The internal consistency of the HADS was reported in 15 of the studies reviewed by Bjelland and colleagues (2002). In those studies, the Cronbach's alpha varied between 0.68 and 0.93 (mean of 0.83) for the anxiety subscale of the HADS, while the alpha for the depression

subscale ranged from 0.67 to 0.90 (mean 0.82). These results suggest good to very good internal consistency.

Savard, Laberge, Gauthier, Ivers and Bergeron (1998) developed the French version of the HADS that was used in the current study. They reported internal consistency with a Cronbach's alpha of 0.89 for both the anxiety and depression subscales, as well as a test-retest reliability of 0.72 over a period of 1.69 months among HIV-infected patients. Concurrent validity was also found between the HADS and the Beck Depression Inventory (correlation coefficients of 0.68 and 0.70 for the HADS anxiety and depression subscales, respectively), as well as between the HADS and the State-Trait Anxiety Inventory (STAI-State) with correlation coefficients of 0.78 for the anxiety subscale and 0.65 for the depression subscale (Savard et al., 1998). Based on these results, the French version of the HADS appears to exhibit very good internal consistency, good test-retest reliability and moderate to good concurrent validity.

Procedure

As mentioned above, targeted patients received a recruitment letter either by mail or in person. The recruitment letter was written by the author and was signed by the treating orthopaedist at the Montfort Hospital and the Ottawa Hospital (General Campus) and by a nurse-collaborator at each of the CHVO sites. In regards to the recruitment procedure, at the Montfort Hospital, one of the receptionists at the orthopaedic clinic was responsible for targeting women meeting inclusion criteria (being a francophone female, awaiting hip or knee surgery due to OA for at least a month) and sending the recruitment letters by mail. At the Ottawa Hospital, a research coordinator identified potential participants meeting inclusion criteria and sent out the

recruitment letters by mail. As for the two CHVO sites, a nurse-collaborator at each site was responsible for identifying patients meeting the inclusion criteria and mailing the recruitment letters.

Patients interested in knowing more about the research or interested in participating in the research were invited, in the recruitment letter, to call the author/principal researcher at the given phone number found at the bottom of the letter. For every call, the study's purpose was reviewed. Patients were advised that if they were interested, they would be asked to answer questionnaires and that a meeting would be scheduled for this purpose. To eliminate any effects of diminished eyesight or handwriting problems associated with disability or advanced age, the psychological measures were administered in an interview format (DeForge & Sobal, 1986). Participants were offered the possibility of receiving a home visit from the author or a research assistant (a fourth year bachelor student in psychology, at the University of Ottawa) to limit potential bias in the administration of the questionnaires. Before the beginning of the interview, participants were introduced to a consent form which they signed once their questions were answered and once they agreed to participate in the study. As mentioned earlier, participants were asked to answer the questionnaires on one occasion only. Following the signing of the consent form, the MMSE was administered in order to make sure that the patient presented no significant cognitive deficit. Afterwards, the remaining measures were administered orally. The interview was over once all of the participant's questions had been answered and/or comments had been heard.

The interview took place between one month after being appointed to the waiting list for a knee or hip replacement and at least one month before the surgical procedure. This principle was instated to ensure that people would go about their daily routines in terms of dealing with their restricted activities due to OA at the time of the interview. The idea was to minimize the impact that the announcement of upcoming surgery or the approaching surgery itself could have on perceived control, coping and mood.

Statistical Analyses

Standard multiple regression analyses were used to test Hypotheses 1 and 2 for the prediction of anxious symptoms, as well as for hypotheses 4 and 5 for the prediction of depressive symptoms. Hierarchical multiple regression analyses were conducted to test Hypotheses 3 and 7 in the prediction of anxious symptoms and for Hypotheses 6 and 8 in the prediction of depressive symptoms. For this cross-sectional correlational design, standard regression analyses was proposed to test the individual contribution of perceived control and coping strategies in the prediction of anxious symptoms (Hypotheses 1 and 2) and depressive symptoms (Hypotheses 4 and 5). A hierarchical approach was warranted for Hypotheses 3, 6, 7 and 8 because of the logical antecedence of appraisal (perceived control) over coping response which has been proposed by both theory (Lazarus & Folkman, 1984; Moos & Schaefer, 1993) and research in the field of arthritis (Down-Wambolt,1991, Down-Wamboldt & Melanson, 1995; Hampson et al., 1996). The findings of these studies suggest that cognitive appraisal, more specifically primary-type appraisal (threat, loss or challenge), influences certain types of coping strategies in the prediction of psychological outcome. Thus, perceived control (a form of

secondary appraisal) can be hypothesized to hold higher predictive power than coping over psychological outcome.

The required sample size for these types of analyses was estimated at ten participants per variable (Tabachnick & Fidell, 2001). For the most complex statistical design in this study (Hypotheses 7 and 8), 8 predictors were used. Based on this estimation, a sample size of 80 participants was judged to be adequate. No adjustments were made to control for possible Type 1 error due to multiple analyses because of the exploratory nature of this study (particularly in the prediction of anxious symptoms in an OA older population based on perceived control and coping, as well as the investigation of the interaction effect of perceived control and coping strategies in the prediction of both anxious and depressive symptomatology). It was decided to maintain the alpha level at 0.05. With regard to statistical power, a sample of 107 participants was recommended for 0.80 power to detect medium effect size at an alpha of 0.05, with 8 predictors (Cohen, 1992). Although the actual sample size did not reach the 107 participants desired, it was close, with a total of 92 participants.

CHAPTER 3

Results

Findings of the preliminary analyses, followed by the demographic characteristics of the sample and internal consistency of the study instruments, the association among study variables and the results for the hypotheses will be presented in the present section.

Preliminary analyses

Before conducting the regression analyses, data were screened for incomplete questionnaire responses. There were only two cases with one item value missing on one questionnaire. In both cases, the one item missing did not exceed 5% of the items on one measure, as recommended by Tabachnick and Fidell (2001). The mean score of the rest of the sample for this particular item was substituted for each missing value (see Tabachnick & Fidell, 2001). Marital status and income were transformed from discrete variables to dichotomized variables. The martial status variable was defined as being married or cohabiting with a life partner and not being married or not cohabiting with a life partner (43 were participants married or living with a life partner - "yes" and 49 participants were not married and not living with a life partner - "no"). Income was dichotomized as: > $21,000 (44 participants) and as ≤ $20,999 (48 participants). This transformation created almost equivalent subcategories. Data screening was also performed to make sure that the following assumptions were met: absence of multicollinearity and singularity, multivariate normal distribution, homoscedasticity, linear relationships between predictors and criterion (Cone & Foster, 1997: Tabachnick & Fidell, 2001). For the screening of univariate outliers and the assessment of normality, SPSS FREQUENCIES

were used. No univariate outliers were found with a z score of $\pm$ 3.29. To assess normality, skeweness and kurtosis statistics were divided by the standard error of skewness and standard error of kurtosis, respectively, to obtain a z score. Variables with a skewness or kurtosis z score of $\pm$ 3.29 were considered to violate the assumption of normality (Tabachnick & Fidell, 2001). To reduce skewness and improve the normality of the distributions, square root and logarithmic transformations were applied to variables (see Table 2). When the behavioral disengagement, the planning and the positive reinterpretation subscales were used independently (for principal component analysis and bivariate correlations with the dependent variables), they were transformed to attain higher normality. However, when planning and positive reinterpretation were combined with active coping to form a coping factor (approach) and when behavioral disengagement was combined with denial to form another coping factor (avoidance) for the main analyses, raw data were used, and then, the factor was transformed if necessary, such as it was the case of approach coping. Screening of multivariate outliers, linearity, multicollinearity, singularity and homogeneity was executed through SPSS REGRESSIONS (Tabachnick & Fidell, 2001). Linearity and homogeneity were assessed via the scatterplot of predicted values and residual values. As for linearity between independent and dependent variables, bivariate scatterplots were observed. Multicollinearity and singularity were assessed with bivariate correlations (Person's correlation coefficients $\geq$ 0.9 suggesting multicollinearity and singularity). Absence of multicollinearity was also assessed with the following criteria: a) variance inflation factor (VIF) no more than 10, b) condition index no more than 30 with 2 or more variance

proportions of 0.5 in the same row (Tabachnick & Fidell, 2001). No multivariate outliers were found, based on the $p < 0.001$ criterion for Mahalanobis distance (Tabachnick & Fidell, 2001).

Table 2

Transformations of Study Variables

Variable	Transformation
Age	No transformation
Marital Status	dichotomous variable
Education	No transformation
Income	dichotomous variable
Duration of illness	square root
Medication	No transformation
AIMS-2 four subscales (mobility, walking and bending, household activities and self-care)	No transformation
SAM – controllable-by-self	No transformation
COPE – approach factor (sum of active coping, planning and positive reinterpretation)	mirror + square root
COPE – avoidance factor (sum of behavioral disengagement and denial)	No transformation
COPE – active coping	No transformation
COPE – behavioral disengagement subscale	Logarithmic
COPE – planning	mirror + square root
COPE – denial	no transformation
COPE – positive reinterpretation	mirror + square root
Interaction of PC x COPE - avoidance	square root
HADS - anxiety subscale	square root
HADS – depression subscale	square root

Note.

AIMS-2 = Arthritis Impact Measurement Scale 2. SAM = Stress Appraisal Measure – perceived control. PC = Perceived control. COPE = COPE Inventory. HADS = Hospital Anxiety and Depression Scale.

Demographic characteristics of the sample

Of the 356 recruitment letters that were sent out to female patients from a total of 4 orthopaedic clinics affiliated to a hospital (Montfort Hospital, Ottawa Hospital – General Campus, CHVO – Hull and CHVO – Gatineau), 97 women contacted the principal researcher to participate in the study. Of those 97 women, 2 were excluded because they were Anglophones, and 3 other women decided not to participate because of time constraints. The sample consisted of 92 women with a mean age of 72.08, ranging from 60 to 89 (see Table 3). Among the sample, 46.7% were married or were living with a partner. The mean number of years of formal education was 10.96 (starting with 1st grade of primary school). Almost half of the sample (41.3%) reported an income level between $10,000 and $20,999. Participants had been suffering from OA for a mean duration of 10.4 years and 82.6% were taking medication for OA (regularly or on occasion, over-the-counter or prescribed anti-inflammatory).

Table 3

Demographic Profile of Older Women (N=92)

Variables	Mean	(SD)	N	(%)	Range
Age (years)	72.08	(7.02)			60-89
Duration of illness (years)	10.40	(7.74)			1-40
Education (years)	10.96	(3.62)			5-20
Marital Status					
Married or with Partner			43	(46.7%)	
Separated			6	(6.5%)	
Single			15	(16.3%)	
Widow			28	(30.4%)	
Income					
$0-9,999			10	(10.9%)	
$10,000-20,999			38	(41.3%)	
$21,000- 30,999			17	(18.5%)	
$31,000- 40,999			15	(16.3%)	
$41,000 +			12	(13.0%)	
Medication					
Yes (anti-inflammatory prescription or over-the-counter anti-inflammatory medication)			76	(82.6%)	
No			16	(17.4%)	

Descriptive Statistics for Major Study Variables

In Table 4, the ranges, means and standard deviations for the major study variables are presented. The total score of the four subscales of the AIMS, as well as the score of each subscale (4 subscales selected), the SAM (Stress Appraisal Measure; subscale of controllable-by-self; perceived control), the COPE - Short Form (avoidance coping - behavioral disengagement and denial; approach coping – active coping, planning and positive reinterpretation) and the HADS (anxiety subscale and depression subscale) are presented.

The mean score of the 4 subscales of the AIMS suggests low levels of functional disability. Among the mean item scores of the four AIMS subscales used, the walking and bending subscale had the highest mean score and the self-care subscale of the AIMS had the lowest mean score. These results suggest that women in this sample had more difficulty with lifting, bending, walking and climbing stairs than getting dressed, taking a shower or getting in and out of bed. The mean score of the SAM, controllable-by-self subscale suggested moderate to high perceived control reported by the participants. Based on the means scores of the COPE - avoidance subscale and the COPE – approach subscale, approach-type coping strategies were reported more frequently than avoidance-type coping strategies. On both HADS depression and anxiety subscales, low scores were found (scores of 7 or less on each scale is considered in the normal range, Zigmond & Snaith, 1983).

Table 4

Means, Standard Deviations, and Ranges of Scores for Study variables (excluding demographic variables)

Measure	# of items	Mean	SD	Range
AIMS	18	3.40	1.38	1.13-6.38
Mobility	5	2.90	2.18	0-10
Walking/Bending	5	7.50	1.78	2.5-10
Self-care	4	0.27	0.74	0-3.74
Household tasks	4	3.04	2.49	0-9.4
SAM	4	3.57	0.82	2-5
COPE – avoidance	8	14.54	4.40	8-26
BD	4	6.13	2.48	4-14
Denial	4	8.39	3.27	4-16
COPE – approach	10	32.90	6.00	15-40
Active	4	13.39	2.28	7-16
Planning	4	13.11	2.95	5-16
PR	2	6.42	1.82	2-8
HADS - depression	7	3.84	3.39	0-14
HADS – anxiety	7	5.89	3.87	0-17

Note.

AIMS (Arthritis Impact Measurement Scale; activity restriction); SAM (Stress Appraisal Measure; perceived control); COPE (COPE Inventory; coping strategies); BD (behavioral disengagement); PR (positive reinterpretation); HADS (Hospital Anxiety and Depression Scale; depressive and anxiety symptoms).

The most frequently reported coping strategies were all approach–type coping strategies, both behavioral (active coping) and cognitive (planning and positive reinterpretation) in nature (see Table 5).

Table 5

Most Frequently Used Coping Strategies in Rank Order

Item	Strategy	Mean Score	Subscale
3	« Je fais ce que j'ai à faire, une étape à la fois. »	3.52	Active coping
8	« Je m'efforce de faire quelque chose au sujet de la situation. »	3.43	Active coping
11	« Je pense à la meilleure façon d'aborder le problème. »	3.40	Planning
18	« J'essaie de voir la situation selon une perspective différente, en sorte qu'elle apparaisse plus positive. »	3.37	Positive reinterpretation
13	« Je pense aux étapes à prendre. »	3.27	Planning
5	« J'essaie d'établir une stratégie pour ce que je dois faire. »	3.23	Planning
6	« J'entreprends des démarches supplémentaires afin de me débarasser du problème. »	3.18	Active coping
17	« Je cherche quelque chose de bon dans ce qui arrive. »	3.07	Positive Reinterpretation

Internal Consistency Reliability for the Study Measures

Cronbach's alphas coefficients for the AIMS, the SAM (controllable-by-self), the COPE (behavioral disengagement, denial, active coping, planning and positive reinterpretation subscales) and the HADS (anxiety and depressive subscales) are reported in Table 6. For the individual subscales of the AIMS used, good internal consistency was found for mobility level and household tasks. The walking/bending and self-care subscales indicate high variability within each scale; this may be due to high variability within subjects or high variability between subjects. For the planned analyses (standard and hierarchical multiple regressions), the 4 AIMS subscales were combined to create a new variable, activity restriction. To do so, the sum of the 4 scales was divided by 4 (number of scales). The alpha coefficient of this new variable was 0.66, which is more acceptable. Internal consistency for the SAM controllable-by-self subscale, for the five COPE subscales (behavioral disengagement, denial, active coping, positive reinterpretation and planning) and for the depression and anxiety subscales of the HADS is good to very good.

Table 6

Reliability Coefficients of the Study Measures

Measure	# of items	Cronbach's alpha coefficient
AIMS subscales		
Mobility level	5	0.77
Walking/bending	5	0.47
Self-care	4	0.38
Household tasks	4	0.77
Global score (combination of the 4 subscales used)	18	0.66
SAM controllable-by-self subscale	4	0.89
COPE subscales		
Behavioral disengagement	4	0.78
Denial	4	0.67
Active coping	4	0.79
Planning	4	0.70
Positive Reinterpretation	2	0.84
HADS depression subscale	7	0.80
HADS anxiety subscale	7	0.75

Note.

AIMS (Arthritis Impact Measurement Scale); SAM (Stress Appraisal Measure); COPE (COPE Inventory); HADS (Hospital Anxiety and Depression Scale).

Associations among study measures were examined through Pearson correlation analyses. The use of medication was not included because of the large number of the participants taking medication (82.6%). These results are reported in Table 7. Age correlated positively with activity restriction and negatively with anxious symptoms and marital status. These results suggest that the older the participant, the higher the level of activity restriction and the lower the level of anxiety symptoms. Age was also associated negatively with marital status, suggesting unsurprisingly that the older women were the more likely they were to be without a partner. Marital status was positively associated with income and negatively with duration of illness, meaning that women who had no partner had lower income and had been living longer with OA. Income and number of years of education correlated positively, suggesting that the higher the level of education, the higher the income. Income was also positively associated with depressive symptoms, suggesting that women with an income of 21,000$ or more reported higher depressive symptoms. Activity restriction had two significant positive relationships with age and avoidance coping, as well as a negative relationship with perceived control. Based on these results, it appears that with advancing age, people's activity level became more limited and that when people were limited in their activities, they tended to use avoidance coping strategies. Activity restriction and depressive symptoms became positively correlated after the square root transformation of HADS - depression subscale, suggesting that when people were limited in their activities they tended to experience depressive symptoms. Perceived control was positively associated with approach coping and negatively associated with avoidance coping and depression. These results suggest that a sense of perceived control was associated with a higher

use of approach-style coping strategies and that it was also associated with a lower use on avoidance-type coping strategies. The results also revealed that the perception of control was related to a lower level of depressive symptoms. Avoidance coping was positively associated with depression, meaning that a higher use of avoidance strategies was associated with more depressive symptoms. With regard to approach coping, it was negatively associated with both depression and anxiety, which suggests that higher use of approach-style coping strategies was associated with lower depressive as well as with lower anxious symptoms. Anxiety and depression were positively correlated suggesting that anxious symptoms tended to be experienced in concordance with depressive symptoms.

Table 7

Intercorrelations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	M	SD
1. Age		0.036	-0.24*	-0.05	0.06 (0.04)	0.29**	-0.26*	0.20	-0.15 (0.15)	-0.26* (-0.21*)	0.05 (0.05)	72.08	7.02
2. Inc			0.28**	0.40**	-0.03 (-0.03)	-0.10	0.15	-0.14	-0.14 (0.11)	0.08 (0.03)	0.18 (0.20*)	0.52	0.50
3. MS				0.04	-0.22* (-0.18)	0.08	-0.13	0.05	-0.10 (0.12)	0.19 (0.14)	0.19 (0.16)	0.48	0.50
4. Ed					-0.03 (-0.05)	0.00	0.16	-0.20	0.08 (-0.05)	0.03 (-0.00)	-0.10 (0.07)	10.96	3.62
5. OA						-0.03 (-0.04)	-0.15 (-0.16)	0.04 (0.04)	0.00 (0.02)	0.02 (0.07)	0.05 (0.06)	10.40 (3.02)	7.75 (1.15)
6. AR							-0.35**	0.25*	-0.09 (0.05)	0.19 (0.18)	0.20 (0.23*)	3.40	1.38
7. PC								-0.25*	0.29** (-0.28**)	0.05 (0.03)	-0.29** (-0.23*)	3.57	0.82
8. Avoid									-0.14 (0.15)	0.07 (0.04)	0.28** (0.25*)	14.54	4.40
9. Appro										-0.25* (0.21)	-0.54** (0.46**)	32.90 (2.60)	6.00 (1.07)
10. Anx											0.57** (0.54**)	5.89 (2.28)	3.87 (0.84)
11. Dep												3.84 (1.73)	3.40 (0.93)

Note.

1. Inc = Income. MS = Marital Status. Ed = Education. OA = duration of OA. AR = Activity Restriction. PC = Perceived Control. Avoid = COPE avoidance. Appro = COPE approach. Anx = Anxiety symptoms. Dep = Depressive symptoms.
2. Bivariate correlations were conducted intially with raw data (first Pearson coefficient reported) and with transformed variables (Pearson coefficient in parentheses).
3. MS and Inc are dichotomized variables.

$^{**}p < 0.01$, $^{*}p < 0.05$

Testing of core hypotheses

PCA on coping variable. Before conducting the standard and hierarchical regression analyses, a principal component analysis (PCA) was performed in order to verify that the coping scales could indeed be meaningfully reduced to two variables: active coping, planning and positive reinterpretation subscales into an approach coping component and behavioral disengagement and denial subscales into an avoidance coping component. A decision was made to conduct a PCA instead of a common factor analysis because the goal of the analysis was to reduce the 5 coping subscales down to a smaller number of variables for the hierarchical regression analysis. It was anticipated that active coping, planning and positive reinterpretation would load on one component, namely approach coping, and that denial and behavioral disengagement would load on another component, avoidance coping (Roesch & Weiner, 2001). Before performing the PCA, assumptions were met by transforming three variables: planning (mirror and square root), positive reinterpretation (mirror and square root) and behavioral disengagement (logarithmic 10). An eigenvalue of 1 was set as the criteria for retaining factors. As anticipated, two components emerged from the PCA: a first component, referred to as approach coping, composed of active coping, planning and positive reinterpretation, and a second component, avoidance coping, including both denial and behavioral disengagement. Approach coping and avoidance coping, explained 42.41 % and 24.33% of variance (with data transformation), respectively, based on the Varimax rotation of the sums of squared loadings. With untransformed variables, the variance explained by each factor was: 42.59% (first factor - approach) and 24.86% (second factor - avoidance) (for the loadings listings see Table 8).

Table 8

COPE scales: Primary Component Analysis

Component 1			Component 2		
Approach	Loading		Avoidance	Loading	
	Transformed data	Untransformed data		Transformed data	Untransformed data
Active coping	-.904	.907	Denial	.833	.796
Planning	.860	.860	Behavioral Disengagement	.640	.690
Positive Reinterpretation	.707	.713			

All regression analyses were conducted with both transformed and untransformed data. Because of differences between results of analyses performed on transformed and untransformed variables, only the analyses using more statistically-sound transformed measures are reported. Transformed data included the approach coping scores (mirror and square root transformation), the score consisting of the interaction between perceived control and avoidance coping (square root transformation), the anxious symptoms scores (square root transformation) and the depressive symptoms scores (square root transformation).

As indicated earlier, no adjustment was made to control for possible Type I error arising from multiple analyses. Since this research is exploratory in nature, especially in the prediction of anxious symptoms in an OA population, and the investigation of the possible interaction effect of perceived control and coping strategies in the prediction of both anxious and depressive symptoms, it was considered appropriate to maximize the chances of finding significant results.

Hypothesis 1

For the first hypothesis, it was proposed that perceived control would account for a significant proportion of variance in predicting anxious symptoms among older women suffering from OA, where higher perceived control would predict lower anxious symptoms. Sociodemographic variables (age and income) and activity restriction were included in the regression to take into consideration the proportion of variance they each account for in anxious symptoms. Table 9 shows the amount of variance in anxious symptoms explained by the sociodemographic variables, activity restriction and perceived control. The model explained

11% of the variance (Adj. $R^2 = 0.07$), F (4, 87) 2.67, $p < 0.05$, in anxious symptoms, with age and activity restriction accounting for 7% and 6% of the variance, respectively[1]. Income and perceived control did not contribute significantly to the prediction of anxious symptomatology. Thus, higher perceived control was not a significant predictor of lower anxious symptoms, refuting the first hypothesis.

[1] It can be noticed that the sum of the unique contribution of the age and activity restriction variable is greater than the total variance of the model (13% and 11%, respectively). This discrepancy is due to the complexity of the relationships among the sociodemographic variables (age and income) and the activity restriction variable.

Table 9

Standard Regression of Sociodemographic variables, Activity Restriction and Perceived Control on Anxious Symptoms

Variable	R^2	Adj. R^2	*B*	*SE B*	β	sr^2
	0.11*	0.07				
Age			-0.03	0.01	-0.28	0.07*
Income			0.10	0.17	0.06	0.00
AR			0.17	0.07	0.28	0.06*
PC			0.05	0.11	0.05	0.00

Note.

1. AR = Activity Restriction. PC = perceived control.

* $p < 0.05$

Hypothesis 2

It was hypothesized that coping strategies would account for a significant amount of variance in anxious symptoms among older women experiencing functional disability due to OA, meaning that higher use of approach coping and lower use of avoidance coping would predict lower anxious symptoms. Again, sociodemographic variables and activity restriction were included in the model. Table 10 displays the amount of variance explained by age, income, activity restriction and coping strategies (approach-type and avoidance-type coping strategies). A total of 16% of the variance was accounted for by the model, (Adj. $R^2 = 0.12$), $F(5, 86) = 3.37$, $p < 0.01$, with age, activity restriction and approach-type coping strategies explaining significant amount of variance in anxious symptoms, 9%, 6% and 5%, respectively. Based on these results, coping strategies, especially approach-type strategies did explain a significant amount of the variance in anxious symptoms with higher use of approach-type being related to lower anxious symptomatology.

Table 10

Standard Regression of Sociodemographic variables, Activity Restriction and Coping Strategies on Anxious Symptoms

Variable	R^2	Adj. R^2	*B*	*SE B*	*B*	sr^2
	0.16**	0.12				
Age			-0.04	0.01	-0.32	0.09**
Income			0.07	0.17	0.04	0.00
AR			0.16	0.06	0.26	0.06*
Avoid			0.00	0.02	0.01	0.00
Appro			0.19	0.08	0.24	0.05*

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for approach coping is attributable to the mirror data transformation on that variable.

** $p < 0.01$, * $p < 0.05$

Hypothesis 3

It was hypothesized that perceived control, as an appraisal variable, would explain a larger portion of the variance in anxious symptoms compared to coping variables. To test the precedence of perceived control over coping strategies in the prediction of anxious symptoms, a hierarchical regression analysis was performed. After the sociodemographic characteristics (age and income) and the level of functional disability were controlled for (Step 1), perceived control was entered (Step2), and then approach coping and avoidance coping (Step 3).

The contribution of perceived control (step 2 of the analysis) did not significantly increase R squared after the variance from age, income and activity restriction was controlled for (age and activity restriction both contributed significantly to the initial variance in anxious symptoms, 7% and 6%, respectively). This means that perceived control does not predict anxious symptoms. Therefore Hypothesis 3 stating that perceived control would explain a larger proportion of the variance in anxious symptoms than coping strategies is refuted. When the coping strategies variables were entered in the regression, R squared significantly increased, accounting for an additional 7% of the variance in anxious symptoms. The total model explained 18% of the variance, (Adj. $R^2 = 0.12$), $F(6, 85) = 3.06$, $p < 0.01$. More specifically, higher approach coping accounted for the improved prediction, with lower avoidance coping not contributing significantly to lower anxious symptoms (See Table 11).

Table 11

Hierarchical Regression of Perceived Control and Coping Strategies (approach and avoidance) on Anxious Symptoms when Perceived Control was entered before Coping Strategies

Variable	R^2	Adj. R^2	R^2 change	*B*	*SE B*	*β*	sr^2
Step 1	0.11	0.08	0.11*				
Age				-0.03	0.01	-0.28	0.07**
Income				0.11	0.17	0.06	0.00
AR				0.16	0.06	0.27	0.06*
Step 2	0.11	0.07	0.00				
Age				-0.03	0.01	-0.28	0.07*
Income				0.1	0.17	0.06	0.00
AR				0.17	0.07	0.28	0.06*
PC				0.05	0.11	0.05	0.00
Step 3	0.18	0.12	0.07*				
Age				-0.04	0.01	-0.30	0.08**
Income				0.03	0.17	0.02	0.00
AR				0.18	0.07	0.29	0.07**
PC				0.14	0.12	0.14	0.01
Avoid				0.00	0.02	0.02	0.00
Appro				0.22	0.08	0.27	0.07*

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for approach coping is attributable to the mirror data transformation on that variable.

** $p < 0.01$, * $p < 0.05$

Hypothesis 4

It was proposed that perceived control would account for a significant proportion of the variance in depressive symptoms in older women restricted in their activities because of OA. In other words, higher perceived control was hypothesized to predict lower depressive symptoms. The same procedure that was used for Hypothesis 1 was repeated. The sociodemographic variables (age, income) and activity restriction were all entered in the standard regression. The model explained 15% of the variance in depressive symptoms, (Adj. $R^2 = 0.11$), $F(4, 87) = 3.71$, $p < 0.01$, with income and perceived control uniquely contributing 7% and 4% of the total variance, respectively (see Table 12). These results support the fourth hypothesis, suggesting that higher perceived control was a significant predictor of lower depressive of depressive symptoms.

Table 12

Standard Regression of Sociodemographic variables, Activity Restriction and Perceived Control on Depressive Symptoms

Variable	R^2	Adj. R^2	*B*	*SE B*	*B*	sr^2
	0.15**	0.11				
Age			-0.10	0.01	-0.07[1]	0.00
Income			0.48	0.19	0.26	0.07*
AR			0.13	0.07	0.20	0.03
PC			-0.26	0.12	-0.23	0.04*

Note.

1. AR = Activity Restriction. PC = perceived control.

** $p < 0.01$, * $p < 0.05$

[1] A difference in the direction of the weak association between the variables age and depressive symptoms can be noticed with a negative beta weight in the regression and a positive correlation coefficient (see Table 7, p. 102). This discrepancy appears to be random and due to error variance.

Hypothesis 5

It was hypothesized that coping strategies would account for a significant amount of variance in depressive symptoms among older women experiencing activity restriction due to OA. Similarly, sociodemographic variables and activity restriction were included in the regression along with approach-type coping and avoidance-type coping variables. Table 13 shows that the model explained 32% of the variance in depressive symptoms, Adj. $R^2 = 0.28$, $F(5, 86) = 8.08$, $p < 0.0001$. Of that variance, income, activity restriction, avoidance-type coping and approach-type coping contributed significantly 4%, 4%, 3% and 16%, respectively. Based on these results, Hypothesis 5 is supported: coping strategies, both higher approach-type and lower avoidance-type were significant predictors of lower depressive symptomatology.

Table 13

Standard Regression of Sociodemographic variables, Activity Restriction and Coping Strategies on Depressive Symptoms

Variable	R^2	Adj. R^2	*B*	*SE B*	*B*	sr^2
	0.32***	0.28				
Age			-0.02	0.01	-0.12	0.01
Income			0.39	0.17	0.21	0.04*
AR			0.14	0.06	0.21	0.04*
Avoid			0.04	0.02	0.19	0.03*
Appro			0.36	0.08	0.41	0.16***

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for approach coping is attributable to the mirror data transformation on that variable.

*** $p < 0.001$, * $p < 0.05$

Hypothesis 6

Two hierarchical regressions were performed to test perceived control's precedence over coping strategies. For the first analysis, perceived control and coping strategies were entered in the second and third steps, respectively (after sociodemographic variables and activity limitation were entered in the first step of the model), as shown in Table 14. The sociodemographic variables (age and income) and activity restriction accounted for a significant proportion of the variance (total adjusted variance explained 7% of the first step, with an individual contribution of income and activity restriction. After that, perceived control contributed significantly to the variance in depressive symptoms, explaining 4% of the variance. The addition of coping strategies in the equation accounted for another 18% of the variance in depressive symptoms. The total variance and the total adjusted variance of the model were respectively 32 and 28% in the prediction of depression symptoms, $F(6, 85) = 6.80$, $p < 0.0001$. Again, approach coping, by itself, accounted for 14% of the variance. Although the model explained a significant amount of the variance in depressive symptoms, perceived control did not account for a larger proportion of variance than coping strategies, as hypothesized.

When the order of introduction of predictors was reversed (in a second regression analysis), the sociodemographic variables and activity restriction (step 1) and coping strategies (step 2) again accounted for a significant proportion of the variance in depressive symptoms (see Table 15). Both avoidance coping and approach coping explained a significant amount of variance in that second step (3% and 16%, respectively). Although the entry of perceived control, in the last step of the regression (third step), did not account for a significant proportion of the variance in depressive symptoms, the total model still reached significance, $F (6, 85) =$

6.80, $p < 0.0001$. In that last step, approach coping still explained, by itself, a significant proportion of variance (14%) while avoidance coping did not anymore. As it was the case for the prediction of anxious symptoms, perceived control did not explain a larger proportion of the variance in depression symptomatology than coping strategies, refuting Hypothesis 6.

Table 14

Hierarchical Regression of Perceived Control and Coping Strategies (approach and avoidance) on Depressive Symptoms when Perceived Control was entered before Coping Strategies

Variable	R^2	Adj. R^2	R^2 change	*B*	*SE B*	*B*	sr^2
Step 1	0.10	0.07	0.10*				
Age				-0.00	0.01	-0.03	0.00
Income				0.43	0.19	0.23	0.05*
AR				0.17	0.07	0.26	0.06*
Step 2	0.15	0.11	0.04*				
Age				-0.10	0.01	-0.07	0.00
Income				0.48	0.19	0.26	0.07*
AR				0.13	0.07	0.20	0.03
PC				-0.26	0.12	-0.23	0.04*
Step 3	0.32	0.28	0.18***				
Age				-0.02	0.01	-0.13	0.01
Income				0.41	0.17	0.22	0.04*
AR				0.13	0.07	0.19	0.03
PC				-0.09	0.12	-0.08	0.00
Avoid				0.04	0.02	0.18	0.03
Appro				0.34	0.08	0.39	0.14***

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for approach coping is attributable to the mirror data transformation on that variable.

*** $p < 0.001$, * $p < 0.05$

Table 15

Hierarchical Regression of Coping (approach and avoidance) and Perceived Control on Depressive Symptoms when Coping Strategies were entered before Perceived Control

Variable	R^2	Adj. R^2	R^2 change	B	*SE B*	β	sr^2
Step 1	0.10	0.07	.010*				
Age				-0.00	0.01	-0.03	0.00
Income				0.43	0.19	0.23	0.05*
AR				0.17	0.07	0.26	0.06*
Step 2	0.32	0.28	0.22***				
Age				-0.02	0.01	-0.12	0.01
Income				0.39	0.17	0.21	0.04*
AR				0.14	0.06	0.21	0.04*
Avoid				0.04	0.02	0.19	0.03*
Appro				0.36	0.08	0.41	0.16***
Step 3	0.32	0.28	0.00				
Age				-0.02	0.01	-0.13	0.01
Income				0.41	0.17	0.22	0.04*
AR				0.13	0.07	0.19	0.03
Avoid				0.04	0.02	0.18	0.03
Appro				0.34	0.08	0.39	0.14***
PC				-0.09	0.12	-0.08	0.00

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for approach coping is attributable to the mirror data transformation on that variable.

*** $p < 0.001$, * $p < 0.05$

Hypothesis 7

It was hypothesized that perceived control *in combination* with coping strategies would account for a significant amount of the variance in anxious symptoms, above and beyond that of perceived control and coping strategies by themselves. The order of entry of the predictors was: 1) block of sociodemographic characteristics (age, income) and activity restriction; 2) perceived control; 3) block of approach coping scores and avoidance coping scores; 4) block of the interaction term of perceived control and approach coping and the interaction term of perceived control and avoidance coping (see Table 16). The introduction of perceived control did not add to the variance, while the entry of coping strategies in the third model added another 7% of the variance (essentially because of approach coping). For that third step, the variance and the adjusted variance of the model were respectively 18% and 12%. The interaction effect of higher perceived control and higher approach coping strategies, as well as the interaction of higher perceived control and lower avoidance coping strategies did not account for an additional significant amount of variance in lower anxious symptoms, maintaining the adjusted variance at 12% for the last step, $F(8, 83) = 2.60$, $p<0.05$. In other words, Hypothesis 7 was not supported for anxious symptoms. Moreover, in the last model of the regression, approach coping strategies lost their unique contribution in the variance of anxious symptoms.

Table 16

Hierarchical Regression with the introduction of Interaction of Perceived Control and Coping Strategies (approach and avoidance) for the prediction of Anxious Symptoms

Variable	R^2	Adj. R^2	R^2 change	B	*SE B*	B	sr^2
Step 1	0.11	0.08	0.11*				
Age				-0.03	0.01	-0.28	0.07**
Income				0.11	0.17	0.06	0.00
AR				0.16	0.06	0.27	0.06*
Step 2	0.11	0.07	0.00				
Age				-0.03	0.01	-0.28	0.07*
Income				0.10	0.17	0.06	0.00
AR				0.17	0.07	0.28	0.06*
PC				0.05	0.11	0.05	0.00
Step 3	0.18	0.12	0.07*				
Age				-0.04	0.01	-0.30	0.08**
Income				0.03	0.17	0.02	0.00
AR				0.18	0.07	0.29	0.07**
PC				0.14	0.12	0.14	0.01
Avoid				0.00	0.02	0.02	0.00
Appro				0.22	0.08	0.27	0.07*
Step 4	0.20	0.12	0.02				
Age				-0.04	0.01	-0.32	0.09**
Income				0.05	0.17	0.03	0.00
AR				0.19	0.07	0.31	0.08**
PC				0.68	0.47	0.66	0.02
Avoid				0.18	0.12	0.92	0.02
Appro				-0.05	0.35	-0.06	0.00
Inter				-0.73	0.48	-0.10	0.01
PC x Avoid Inter				0.08	0.10	0.34	0.02
PC x Appro							

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for the approach coping predictor is attributable to the mirror data transformation on that variable.

** $p < 0.01$, * $p < 0.05$

Hypothesis 8

As hypothesized for the prediction of anxious symptoms (Hypothesis 7), it was proposed that the combination of perceived control and coping strategies would account for a greater proportion of the variance in the prediction of depressive symptoms, over and above that of perceived control and coping strategies separately. The same steps as those of the hierarchical regression performed to test Hypothesis 7 were followed. The test of the interaction model of perceived control and coping strategies in the prediction of depressive symptoms (see Table 17) revealed that the interaction term of perceived control with coping strategies (i.e. interaction between perceived control and approach coping and the interaction of perceived control with avoidance coping) explained another significant 5% of the variance, above and beyond that of coping strategies. The variance and adjusted variance in depressive symptoms were respectively 38% and 32% for the last the step, $F(8, 83) = 6.26$, $p < 0.0001$. In that fourth equation, perceived control accounted for 4% of unique variance, while avoidance coping explained 6% of the variance by itself. Approach coping did not add any more unique variance in the prediction of depressive symptoms, in that last model. The interaction of higher perceived control with lower use of avoidance coping accounted for 5% of unique variance in lower depressive symptoms. The interaction of higher perceived control with higher use of approach coping did not explain any significant proportion of variance in lower depressive symptoms. This means that Hypothesis 8 was supported for the prediction of depressive symptoms, i.e. the importance of the combined occurrence of higher perceived control and lower recourse to avoidance coping in the prediction of lower depressive symptoms.

Table 17

Hierarchical Regression with introduction of Interaction of Perceived Control and Coping strategies (approach and avoidance) for the prediction of Depressive Symptoms

Variable	R^2	Adj. R^2	R^2 change	*B*	*SE B*	β	sr^2
Step 1	0.10	0.07	0.10*				
Age				-0.00	0.01	-0.03	0.00
Income				0.43	0.19	0.23	0.05*
AR				0.17	0.07	0.26	0.06*
Step 2	0.15	0.11	0.04*				
Age				-0.10	0.01	-0.07	0.00
Income				0.48	0.19	0.26	0.07*
AR				0.13	0.07	0.20	0.03
PC				-0.26	0.12	-0.23	0.04*
Step 3	0.32	0.28	0.18***				
Age				-0.02	0.01	-0.13	0.01
Income				0.41	0.17	0.22	0.04*
AR				0.13	0.07	0.19	0.03
PC				-0.09	0.12	-0.08	0.00
Avoid				0.04	0.02	0.18	0.03
Appro				0.34	0.08	0.39	0.14***
Step 4	0.38	0.32	0.05*				
Age				-0.02	0.01	-0.18	0.03
Income				0.43	0.17	0.23	0.05*
AR				0.14	0.07	0.21	0.03*
PC				1.05	0.46	0.92	0.04*
Avoid				0.32	0.11	1.52	0.06**
Appro				0.25	0.34	0.29	0.00
Inter				-1.20	0.47	-1.50	0.05*
PC x Avoid Inter				0.02	0.10	0.09	0.00
PC x Appro							

Note.

1. AR = Activity Restriction. PC = perceived control. Avoid = Avoidance coping. Appro = Approach coping.
2. The positive sign of the unstandardized and standardized beta weight coefficients for the approach coping predictor is attributable to the mirror data transformation on that variable.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In summary, in the prediction of anxious symptoms, only one of the four hypotheses was supported, Hypothesis 2, which stated that coping strategies, specifically approach-type strategies, would explain a significant amount of variance in anxious symptoms. Perceived control was not a significant contributor in anxious symptoms, refuting Hypothesis 1 and 3. The seventh hypothesis pertaining to the interaction effect of perceived control and coping strategies in the prediction of anxious symptomatology was also refuted.

With regard to the prediction of depressive symptoms, three of the four hypotheses were supported. Perceived control and coping strategies both accounted for a significant proportion of variance, supporting Hypotheses 4 and 5, respectively. However, Hypothesis 6 was not supported: perceived control did not hold higher predictive value than coping strategies. Hypothesis 8 was supported: perceived control combined with coping strategies, more specifically avoidance-type strategies, explained a significant amount of variance over and above that of perceived control and coping strategies individually.

Additional analysis

An additional analysis was conducted to examine the association between the specific coping strategies scales and the dependent variables.

Correlations of coping strategies subscales with dependent variables. In addition to the planned analyses, bivariate correlational analyses were conducted in order to examine the relationships between the coping strategies subscales (active coping, denial, planning, positive reinterpretation and behavioral disengagement) and anxiety and depression subscales (Table 18). With regard to anxious symptoms, positive reinterpretation was the only type of coping strategy that was significantly and negatively associated with them. A significant negative relationship

was detected between active coping and depression, suggesting that a higher use of active strategies (behavioral approach) was associated with lower symptoms of depression. The same relationship was found between planning (cognitive approach) and depressive symptoms, as well as between positive reinterpretation and depressive symptomatology. These results suggest that higher use of positive reinterpretation (cognitive approach) was associated with both lower anxious and lower depressive symptoms. Higher use of the two other types of approach coping strategies, more specifically planning and active coping was also related to lower depressive symptoms. Finally, behavioral disengagement (behavioral avoidance) was positively related to depression, which means that participants who utilized more behavioral disengagement strategies (avoidance behaviour) tended to experience more depressive symptoms.

Table 18

Correlations of the COPE subscales with the Dependant Variables (HADS – anxiety and depression subscales)

Strategies	Anxiety	Depression	M	SD
Active coping	-0.169	-0.471**	13.39	2.29
	(-0.130)	(-0.438**)		
Denial coping	0.106	0.083	8.39	3.27
	(0.05)	(0.068)		
Planning	-0.165	-0.383**	13.12	2.95
	(0.165)	(0.325**)	(1.83)	(0.74)
Positive	-0.329**	-0.553**	6.42	1.82
Reinterpretation	(0.251*)	(0.482**)	(1.52)	(0.53)
Behavioral	-0.015	0.405**	6.13	2.45
Disengagement	(0.037)	(0.482**)	(0.75)	(0.15)

Note.

1. Bivariate correlations were conducted initially with raw data (first Pearson coefficient reported) and with transformed variables (Pearson coefficient in parentheses).

** $p < 0.01$, * $p < 0.05$

Summary of results

Prediction of anxious symptoms based on perceived control and coping strategies

Perceived control did not predict anxious symptoms, while coping strategies (more specifically approach-type coping) did. This suggests that coping strategies are more important than perceived control in the prediction of anxious symptoms, and not the reverse as hypothesized. In other words, only higher use of approach coping was associated with lower levels of anxious symptoms. Moreover, the combined occurrence of perceived control and coping strategies (both approach coping and avoidance coping) did not add incremental predictive value to that of perceived control and coping strategies individually, suggesting that perceived control did not interact with coping strategies (approach-type nor avoidance-type) in a manner that would significantly predict anxious symptoms. Once the interaction term of perceived control and coping strategies was taken into account, approach-type coping strategies lost its predictive power.

Prediction of depressive symptoms based on perceived control and coping strategies

Both perceived control and coping strategies predicted depressive symptoms. However, contrary to what was hypothesized, perceived control did not contribute in a stronger fashion to depressive symptoms than coping strategies. It was actually approach coping that added a unique variance in the prediction of depressive symptoms (when perceived control and coping strategies were both considered separately in the equation), meaning that higher recourse to approach-type coping strategies was related to lower depressive symptoms. As for the contribution of the interaction between perceived control and coping strategies for depressive symptoms, the hypothesis was partly supported in that perceived control combined with coping strategies

(specifically avoidance-type coping) did contribute significantly to their variance. In other words, the combined presence of higher perceived control and lower avoidance coping was related to lower depressive symptoms. Again, once the interaction effect of perceived control and coping strategies were taken into account, approach-type coping did not significantly contribute to the variance in depressive symptoms anymore.

CHAPTER 4

Discussion

The purpose of this research was to investigate how an important aspect of stress appraisal, specifically perceived control, and coping strategies contribute to the occurrence of anxious and depressive symptoms in older women who have activity restrictions due to OA. In this way, this study tested the predictive value of two important variables in the stress and coping literature: perceived control and coping strategies. An additional goal was to determine if appraisal (perceived control) had a greater contribution than coping strategies (including approach and avoidance coping) in predicting anxious and depressive symptomatology. Also, the study included a test of the interaction between perceived control and coping strategies, examining if both together were superior predictors of anxious and depressive symptoms.

The major findings of the study are presented and discussed here, followed by an examination of the strengths and limitations of the study. The final section will delineate implications for future research and clinical practice.

Main Findings

Prediction of anxious symptoms

It was hypothesized that both perceived control (Hypothesis 1) and coping strategies (Hypothesis 2) with OA-related activity restriction would predict anxious symptoms in older women. Additionally, it was assumed that perceived control would take precedence over coping strategies in their prediction (Hypothesis 3). Perceived control was not a significant contributor to the variance in anxious symptoms, while coping strategies were. Based on these results, the first hypothesis was not supported, whereas the second was. Contrary to what was expected,

perceived control did not exert a greater influence than coping strategies, refuting Hypothesis 3. Approach coping specifically explained a significant proportion of variance in anxious symptoms. These results suggest that approach coping strategies had a unique significant contribution (once the joint influence of other predictors was partialled out), meaning that the more older women suffering from OA applied approach coping strategies (particularly positive reinterpretation) to their activity restriction, the less anxious symptoms they experienced.

Contrary to expectation, the interaction of perceived control with coping strategies did not contribute to the prediction of anxious symptoms. Therefore, Hypothesis 7 was not supported. Neither combination (perceived control x approach coping or perceived control x avoidance coping) had a significant unique contribution to anxious symptoms. This suggests that, in this particular sample, perceived control did not interact with the use of either approach or avoidance coping in the prediction of anxious symptoms. The lost of unique contribution of approach-type coping strategies in the last model could be explained by the redistribution of the variance amongst variables. Two new variables were created (products of perceived control with approach-type coping and of perceived control with avoidance-type coping) and added to the regression along with perceived control, approach coping and avoidance coping strategies. It may be possible that because the interaction of perceived control and approach coping strategies was not significant, approach coping lost its unique contribution in the process.

Prediction of depressive symptoms

Depressive symptoms were significantly predicted by both variables of perceived control and coping strategies, supporting Hypotheses 1 and 2. However, coping strategies had greater predictive power, a finding that refutes the sixth hypothesis. With depressive symptoms as an

outcome, the results revealed that the higher the level of perceived control over OA activity restriction, the lesser the occurrence of depressive symptoms. With regard to coping strategies, when perceived control was considered in the equation, higher use of approach coping (active coping, planning, and positive reinterpretation) specifically was associated with lower levels of depressive symptoms. Avoidance coping approached significance ($p = 0.06$). The results suggest that more older women with OA-related activity restriction engaged in approach-type coping stratégies (i.e. active coping, planning and positive reinterpretation), less depressive symptoms they experienced.

As for the prediction of depressive symptoms based on the interaction effect of perceived control with coping strategies (Hypothesis 8), the results were significant for the combination of perceived control with avoidance-type coping strategies only. These results propose that higher perceived control combined with lower used of avoidance coping strategies was significantly associated with lower level of depressive symptoms. In other words, more older osteoarthritic women perceived control over their activity restriction, and less they used avoidance coping strategies, less they experienced depressive symptoms. Again the lost of predictive power by approach coping strategies once the interaction effect of perceived control and coping strategies was taken into account could be explained by the redistribution of the variance among all predictors. The fact that perceived control in combination with approach coping strategies was not significant might have cancelled the unique predictive effect of approach coping.

Discussion of findings

The main findings will be discussed in the present section, starting with sociodemographic variables (age and income), followed by activity restriction, perceived control,

coping strategies and characteristics of the sample on outcome measures.

Age and Income

In this sample of older women suffering from OA, age significantly predicted symptoms of anxiety, with older age being related to lower anxiety symptoms. This result is similar to what has been found in the literature on the occurrence of anxiety in advancing age. In most relevant studies, anxiety has been reported to decrease or remain stable with advancing age in different samples, for instance, in older adults (Fuentes & Cox, 2000), in knee pain patients (Creamer et al., 1999) and in rheumatoid arthritis patients (Hawley & Wolfe, 1988). In the Women's Health and Aging Study, conducted by the National Institute on Aging (Kasper & Simonsick, 1995) a decrease in anxious symptoms (consisting of 2 symptoms or more) was found between the 65-74 age group (20.5%) and the 75-84 age group (16.5%) followed by an increase in anxious symptoms between the 75-84 age group (20.5%) and the 85 years old and above group (20.6%).

With regards to depressive symptoms, age was not a significant predictor. Depressive symptoms did not differ as a function of age. These results are similar to those found by Katona and colleagues (1997), in a sample of older adults divided in two age groups (65-74 years old and 75 years old and above). While Kasper and Simonsick (1995) have found depressive symptoms to decrease with age among older women, other research suggests that depressive symptoms increase with age (e.g. Newman & Engel, 1991). The fact that participants in this sample did not experience higher levels of depressive symptomatology with increasing age, although suffering from chronic OA, might be explained, in part, by some personal factors (e.g. perceived control and coping strategies) promoting adaptation to chronic stressors.

Income significantly and positively predicted depressive symptoms among OA

participants, meaning that income equal to or above 21,000$ was related to higher depressive symptoms. These findings are contrary to those of Hawley and Wolfe (1988) for a sample of RA patients, as well as those of a review conducted by Beekman and colleagues (1999), on the prevalence of depression in later life, where depression was associated with lower socio-economic status. Mann (2001) also found that among community-dwelling older adults, income was the only demographic variable that significantly predicted depressive symptoms, where higher income was related to a lower number of depressive symptoms. In contrast, a study on support group for older women did not find a significant relationship between the income level and depressive symptoms (Segrist, 1998). The positive relationship between income and depressive symptoms found in the current study might be explained by the transformation of the variable income into a dichotomous variable. Although the participants were distributed almost equally in the two categories, the use of such a small number of income categories might not have well represented the range of income levels (see Table 3 for the percentage of participants among the different income categories).

Activity restriction

Prediction of anxious symptoms. Activity restriction was a significant and unique predictor of anxiety symptoms. The more participants were restricted in their level of activity, the more anxious symptoms they experienced. These results are also supported by previous research (Beekman et al., 1998; Beekman et al., 2000; Hawley & Wolfe, 1988; Schulz et al., 2000). Activity restriction, if perceived as a threat to one's self, may evoke anxiety (Hocking & Koenig, 1995; Wylke & Mion, 1990). Functional limitations due to OA may generate anxiety because of uncertainty about its course (de Beurs et al., 1999), wondering if functional

limitations will continue to increase, if dependency on others or certain devices (e.g. cane) will be needed to maintain one's activity level or if upcoming surgery will be successful.

Fear is a central concept in anxiety (Watson et al., 1995) and it has been linked to higher functional disability. In a study among OA patients, fear of movement/(re)injury was associated with a significant reduction of the level of daily functioning (Heuts et al., 2004). Also, a higher level of pain, in addition to the fear of pain was significantly associated with higher activity limitation. Another study on chronic back pain found that fear of pain was a significant predictor of disability (Peters, Vlaeyen, & Weber, 2005). Furthermore, others (Swinkels-Meewisse, Roelofs, Verbeek, Oostendorp, & Vlaeyen, 2003) have found, in a sample of low back pain patients, that: a) pain intensity and pain-related fear significantly predicted functional disability; b) functional disability mediated the link between fear of movement/(re)injury and participation in life activities; and c) functional disability mediated the association between pain intensity and participation in life activities. These results suggest that pain-related fear as well as pain itself can influence the level of functional disability.

As another explanation, some researchers (Léger, Ladouceur, & Freeston, 2002) found that the type of physical limitations among different degenerative conditions (multiple sclerosis, arthritis, muscular dystrophy or ataxia) and non degenerative conditions (spinal cord lesion, cerebral motor deficiency or multiple fractures) did not influence the presence of anxiety symptoms but rather the self-acceptance of the physical limitations experienced. It appears that the acceptance of activity limitations is associated with reduced anxious symptoms. Maybe the association between activity limitation and anxious symptoms is influenced, at least in part, by the acceptance of such activity restriction. A difficulty accepting one's level of functional

limitations might generate anxious symptoms such as uncertainty, concerns or apprehension.

. *Prediction of depressive symptoms.* Higher activity restriction also significantly predicted more depressive symptoms, with a unique contribution. These findings are consistent with research (e.g. Dent et al., 1999; Hawley & Wolfe, 1988; Kennedy et al., 1989; Williamson & Schulz, 1992; Williamson and Shaffer, 2000) suggesting that illness-related functional disability leads to higher depressive symptoms. It appears that the more limited participants were in their activities, the more depressed they felt. Being limited in one's activities may mean having to give up pleasant or cherished activities, or it may mean not being able to practice them as often, or for as long as before. It may also mean depending on others to continue practicing them. Such changes could be associated with the experience of loss, which is a key element in depression (Beck, 1972; Kendall & Watson, 1989).

Severity of self-report activity restriction. Contrary to expectations, low scores on the activity restriction measure suggest that participants did not experience high functional disability at the time of assessment, with a mean total score of 3.4 out of 10 (higher score meaning higher functional disability) on the AIMS subscales. The low mean score on the subscale of self-care (0.27 out of 10) which is close to that of Meenan and colleagues (1992) (mean score of 0.39 in a sample of 109 osteoarthritic patients), appears to lower the total score of the four subscales that form the activity restriction variable. The mean scores of the other three AIMS subscales were: 2.9 for mobility, 7.5 for walking/bending, and 3.0 for household activities. The mean score of these subscales in the current study were higher than those reported by Meenan and colleagues (1992) (1.4 for mobility, 4.2 for walking/bending, 0.9 for household activities). In our sample, participants appeared to experience particularly high functional limitations in the walking and

bending area. With mean scores of 2.9 for the mobility subscale and 3.0 for the household activities subscale, they seemed to experience fewer limitations in those areas. Higher scores were anticipated on the activity restriction measure since all participants were awaiting hip or knee surgery, and the literature indicates that OA patients awaiting knee or hip replacement exhibit lower physical function and social function compared to controls (Croft, Lewis, Hones, Coggon, & Cooper, 2002; Öberg & Öberg, 1996). Moreover, criteria for joint replacement include: a well established diagnosis, pain at rest as well as pain that is not controllable by non-surgical treatment according to Öberg & Öberg (1996), and a "radiographic evidence of joint damage and moderate to severe persistent pain or disability, or both" as stated by the NIH (1994).

One possibility for the explanation of the low self-report activity restriction (except for the walking/bending subscale) could be that participants underreported their functional limitations (Fried & Guralnik, 1997; Rodger & Miller, 1997). It appears that older people who use compensatory strategies, such as holding on to furniture while moving around or getting up of a chair, or leaning on a shopping cart for support while shopping, do not necessarily report difficulties in performing these tasks (Fried & Guralnik, 1997). During the administration of the AIMS and the COPE, a number of participants indicated the means (e.g. take medication before going out, pace themselves) and the assistive devices (e.g. cane for walking or shopping cart for leaning over in stores) they took to continue performing their activities. Also, during the interview, ambulation difficulties (e.g. difficulties while walking around and getting up and down the stairs, or getting out of a chair) were observed in many participants. Unfortunately, since there was no objective measure of their actual level of functional ability, it was not possible to compare or match their self-report activity limitations to their objective or actual level of

functional ability.

Perceived Control

Association with coping strategies. In this study, perceived control was positively associated with approach coping, suggesting that the more older osteoarthritic women perceived control over their activity limitation, the more they used approach coping strategies. These findings are consistent with research in arthritis populations (Hong Tak, 1998; Parker et al., 1988) and various other medical populations (Roesch & Weiner, 2001). These results suggest that participants who believed in their capability to manage their OA-related activity restriction tended to be more active, do more planning and reinterpret their activity restriction in a more positive light. Perceived control was also negatively associated with avoidance coping, which is in line with previous research both in arthritis patients (Parker et al., 1988; Smith, 2002; Smith & Wallston, 1992) and other medical patients (Roesch & Weiner, 2001). Based on these results, participants who believed in their capacity to manage their arthritis activity restriction had lower use of avoidance-type coping strategies, which means that they had a lower tendency to abandon or give up when confronted with activity restriction, and a lower tendency to deny their functional limitations. These results support theories and research in the field of stress and coping.

Prediction of anxious symptomatology. Surprisingly, perceived control did not contribute significantly to the explanation of anxious symptoms. Our findings contradict those of Burckhardt & Bjelle (1996) and Smith (2002) who had found a negative association between perceived control and anxiety symptoms. Perhaps differences in the characteristics of our sample could account for the discrepancy across studies. Women in the present study had been suffering

from OA for a mean of 10 years, with 75% of the sample suffering from it for more that 5 years. Literature suggests that anxiety may be more intense earlier in the disablement process, when long-term consequences remain unknown (Schulz et al. 2000). At that point, perceived threat and anticipation of possible consequences may be experienced. Schulz and colleagues (2000) added that once disability manifests in daily activities and social roles, losses are experienced and depressed affect may become more prominent. Other sources also suggest that anxiety is associated with the anticipation or threat of potential loss, while depression or depressive symptoms, are rather experienced when a major loss has occurred, such as activity restriction in the case of participants in the current study (Maser & Cloninger, 1990). In addition, these authors suggest that anxiety tends to be experienced when a sense of helplessness co-occurs with a sense of uncertainty about the future, and that, when uncertainty turns to certainty about negative future events, depression arises with a sense of helplessness accompanied by a sense of hopelessness (Maser & Cloninger, 1990). Since participants in our sample had been suffering from OA for many years, it can be hypothesized that the initial anxiety some participants might have experienced in the beginning of the disablement process, when first confronted with some functional limitations, might have been replaced with depressive symptoms once the anticipation and uncertainty about potential losses (e.g. in-home mobility and daily activities) became certain and loss was experienced. In other words, it may be possible that in the beginning of the disablement process, perceived threat about future potential losses is accompanied by apprehension and uncertainty. However, as actual losses occur, apprehension turns into confrontation with evidence, and helplessness and depressive symptoms take the front stage.

An alternative interpretation of the lack of relationship between perceived control and

anxiety, contrary to previous findings (Burckhardt & Bjelle, 1996; Smith, 2002), is possible differences in the assessment of perceived control. Burckhardt and Bjelle (1996) assessed both self-perceived control and helplessness with regard to arthritis, while Smith (2002) used a measure of helplessness towards arthritis. In the current study, a subscale of perceived control from the Stress Appraisal Measure, controllable-by-self (Peacock & Wong, 1990) was used and applied to activity restriction. Participants answered the questionnaire with a specific activity in which they had been restricted, in the past week, because of OA. Perhaps these differences in the assessment of perceived control influenced the results in regards to anxiety symptoms. The lack of significant results might also be attributable to the selected population. Burckhardt and Bjelle (1996) had a sample of patients with RA, while Smith (2002)'s sample included both RA and OA patients.

Finally, another possibility may be that perceived control is more relevant in depressive symptomatology among patients with long standing OA, where a lack of perceived control or a sense of helplessness becomes associated with the chronicity of the condition and the concurrent losses, such as activity restrictions. At this point, helplessness can be accompanied by hopelessness and become associated with depressive symptoms.

Clearly more research examining the relationship between perceived control and anxious symptoms is needed in medically ill population, especially in OA patients.

Prediction of depressive symptomatology. As in other studies on perceived control over arthritis, arthritis-related pain or disability (Burckhardt & Bjelle, 1996; Murphy et al., 1999; Smith, 2002; Smith & Wallston, 1992), we found that higher perceived control (in our case, over OA-related activity limitation) was associated with lower levels of depressive symptoms. These

findings can be interpreted in light of the learned helplessness theory (Seligman, 1975). This theory argues that perceived lack of personal control is a major contributing factor to depression. A reformulated model of learned helplessness (Abramson, Seligman, & Teasdale, 1978) suggests that helplessness is a consequence of internal attributions about loss or failure. According to these authors, depression is a result of a tendency to attribute failure to internal and stable traits, such as a personal lack of ability. This being said, we found that perceived control lost its unique significant predictive value for depressive symptoms when coping strategies were entered in the regression equation, suggesting that they shared common variance. Moreover, perceived control did not hold higher predictive value than coping strategies in depressive symptoms; rather it explained a smaller proportion of the variance than coping strategies. When entry level in the HMR was reversed, and coping strategies preceded perceived control, it still explained more variance than perceived control. Furthermore, the latter's unique contribution in variance was not significant anymore, meaning that it did not account for additional variance in depressive symptoms above and beyond that of coping strategies. These results suggest that coping strategies' contribution was more significant than perceived control in the prediction of depressive symptoms in this sample of older women with OA.

Coping strategies

Frequent types of coping strategies. The salient coping strategies in our sample were approach-type coping, more specifically active coping (approach-behavioral), planning (approach-cognitive) and positive reinterpretation (approach-cognitive). These results are similar to those of Hong Tak (1998) who found that the most frequently used coping strategies included problem-focused coping strategies, and those of Gignac and colleagues, (2000; 2002) who found

that compensation behaviours (e.g. use of furniture/equipment, activity modification) were the most frequently used followed by optimization behaviours (e.g. activity planning, pacing) among their OA and OP (osteoporosis) sample. Moreover, Gignac and colleagues (2000) found that optimization behaviours were most frequently applied to in-home mobility and valued activities, while compensation were most frequently used for in-home mobility and for self care activities. Cognitive restructuring was also among the most frequently used coping strategies in Parker et al.'s (1988) sample of arthritic patients. With regard to age group comparisons in approach-type coping, Burke and Flaherty (1993) found that older women suffering from arthritis tended to use positive reappraisal more frequently than younger adults. Furthermore, Aldwin (1991) found that older adults, in general, used less escape-avoidance type coping strategies (e.g. denial) than younger adults, while they used problem-oriented coping strategies at a similar frequency.

Prediction of anxious symptoms. Approach coping was negatively correlated with anxious symptoms. This is consistent with past research which suggests that approach-type coping is related to lower anxiety in RA and OA patients (Smith, 2002). In our sample, approach coping even predicted anxiety symptoms uniquely. These results suggest that higher use of approach-type coping strategies was related to lower anxious symptoms. When correlations between the different types of coping strategies and anxious symptoms were examined, positive reinterpretation was the only approach-type strategy significantly negatively correlated with anxious symptoms. This finding suggests that the more older women coped with their activity restriction by trying to see the situation in a more positive light or by trying to give meaning to the situation, the less anxious symptoms they experienced. This finding is in line with cognitive behaviour therapy, which highlights the role of thoughts in the manifestation of anxiety and its

treatment. It stipulates that people's expectations and interpretations of events as being dangerous or threatening influence the experience of emotions such as anxiety (Clark, 1996). In therapy, by applying cognitive restructuring to apprehensive or danger-related thoughts, people learn to challenge those thoughts and replace them with more adaptive alternatives, in turn reducing anxiety. Positive reinterpretation can be seen as a form of cognitive restructuring where the person tries to find meaning in the stressful encounter, in this case, activity restriction. Not only was positive reinterpretation among the most frequent coping strategies used in our sample, it was also associated with lower anxiety symptoms. This suggests that it was an adaptive way of dealing with activity limitation due to OA, and it supports the relevance of an intervention such as cognitive behaviour therapy.

The association between avoidance coping and anxiety symptoms was not significant, which contradicts the findings of Scharloo and colleagues (1999), and those of Smith (2002) who had found positive relationships between avoidance coping and anxious symptoms in their arthritis samples. It appears that, in our sample of OA older women awaiting hip or knee surgery, higher use of avoidance-type coping strategies was not related to higher symptoms of anxiety. Theory and research in the field of anxiety suggest that avoidance is a central element in the experience and the maintenance of anxiety (e.g. Clark, 1996; Kendall & Watson, 1989). Our conflicting results might be explicable in the context of chronic illness. It may be possible that avoidance-type coping strategies can be used without producing additional harm when dealing with the debilitating effects of OA, such as functional disability, by offering a temporary respite. In that perspective, Lazarus and Folkman (1991) suggested that denial-like coping strategies can sometimes palliate distress when nothing constructive can be done to overcome threat or harm.

Another possible explanation for the lack of association between avoidance-type coping and anxious symptoms could be related to the type of behavioral avoidance coping strategies that are assessed by the COPE. In this measure, behavioral avoidance refers to behavioral disengagement, which is characterized by a tendency to abandon or "give up" rather than a tendency to avoid or leave a situation because of perceived threat ("flight" reaction), as it is the case in anxiety. It may also be possible that our results are relevant to this particular sample. Again, few studies with anxiety as an outcome variable, in the context of OA, have been conducted, and more empirical research examining this relationship is warranted.

The interaction effect of perceived control with coping strategies (perceived x approach coping and perceived control x avoidance coping) when entered in the last step of the fourth model did not predict anxiety symptomatology. Neither perceived control in combination with approach coping nor perceived control in combination with avoidance coping was related to anxious symptoms. These results suggest that, when participants perceived higher control over their activity restriction and used more approach-type coping strategies, they were not significantly less anxious. Additionally, our findings suggest that when participants expressed higher perceived control over their activity restriction while using less avoidance-type coping strategies, they did not feel less anxious.

Prediction of depressive symptoms. Approach coping was negatively correlated with depressive symptoms, and even predicted them with a unique contribution of variance. This negative association between approach-type coping strategies and depressive symptomatology is also consistent with past research in community-dwelling older adults (Cappeliez & Blanchet, 1986; Kraaij, Pruymboom, & Garnefski, 2002), arthritic populations (Hampson et al., 1996;

Parker et al., 1988; Smith, 2002), and other medical conditions (see Roesch & Weiner, 2001). All types of approach coping strategies in this study were significantly associated with lower depressive symptoms (active coping, planning and positive reinterpretation), suggesting that the more participants dealt with their OA-related activity restriction by being active, by planning around their activity limitations and reinterpreting their activity restriction more positively, the less they experienced depressive symptoms. These results also support theoretical models of stress and coping which suggest that higher use of approach-type coping strategies are related to lower levels of psychological distress (Lazarus & Folkman, 1984; Moos & Schaefer, 1993). They are also in line with the principles of cognitive behavioral therapy of depression, which stipulate that depression is a reaction to perceived loss and is characterized, in part, by cognitive and behavioral symptoms that include: negative thinking about the self, the world and the future and lowered activity level (Beck, 1972; Beck, Rush, Shaw & Emery, 1979; Clark, 1996). In cognitive behaviour therapy of depression, the goal is to increase the behavioral level and engage in more pleasurable and rewarding behaviours/activities, as well as to reduce negative thinking and self-critism by challenging such thoughts and substituting them for more adaptative ones (Beck et al., 1979; Leahy & Holland, 2000). The coping strategies that were associated with less depressive symptoms in our study correspond to cognitive behavioral strategies recommended to reduce depression. For instance, the results of the current study suggest that participants who engaged in more active coping, maintained a certain level of activity, and did more planning (on a cognitive level) to manage their activity restriction (e.g. means they need to take to do a specific activity or task), which was related to fewer depressive symptoms. The findings also suggest that participants who reported higher use of positive reinterpretation were viewing their

activity restriction in another light, in a more positive or adaptative way, which was also associated with lower depressive symptoms. The approach-type coping strategies in this study could be compared to cognitive behavioral strategies used in the treatment of depression. Within a cognitive-behavioral framework, active coping could be viewed as behavioral activation, planning as a cognitive way to put in place the means necessary to engage in activity, and positive reinterpretation as cognitive restructuring.

Once perceived control was combined with coping strategies (perceived x approach coping and perceived control x avoidance coping) in the last step of the fourth model predicting depressive symptomatology, approach coping lost its unique contribution in the explanation of depressive symptoms. Avoidance coping became a unique significant predictor of depressive symptoms, and its combination with perceived control was also predictive of depressive symptoms. It is interesting to note that the relationship between avoidance coping and depressive symptoms only became significant when the interaction between perceived control and coping strategies was taken into account in the regression analysis. This suggests that, by introducing the interactional effect of perceived control and coping strategies, the role of avoidance coping became more relevant to the prediction of depressive symptoms. Before considering the significance of interaction between perceived control and coping strategies, the meaning of avoidance coping as a unique predictor of depressive symptoms will be discussed. The fact that avoidance coping was positively correlated with depressive symptoms suggests that people who used more avoidance coping strategies also reported feeling more depressed. Similar results have been reported by other researchers (Murphy et al., 1999; Parker et al., 1988; Smith, 2002) and are in accordance with stress and coping theory (Larazus & Folkman, 1984; Moos & Schaefer, 1993)

and cognitive therapy of depression (Beck, 1972; Beck et al., 1979; Clark, 1996; Leahy & Holland, 2000). A specific type of avoidance coping strategy was significantly and positively correlated with depressive symptoms in our study, behavioral disengagement. This means that, participants who engaged in more behavioral disengagement had a tendency to abandon or give up when confronted with activity restriction due to OA, and felt more depressed. This finding supports cognitive behaviour therapy of depression. When considering the positive relationship between behavioral disengagement and depressive symptoms, the emergence of a vicious cycle could be imagined where the more one gives up, the more he/she feels depressed, which in turn can increase the likelihood of abandoning activities or tasks. Not giving up in the midst of activity restriction, in other words, finding ways to remain active and to maintain a certain level of activity appears to be the key in adaptation to activity restriction due to OA.

With regard to the interaction effect of perceived control with avoidance coping, the results suggest that participants who perceived higher control over their activity restriction and who used less avoidance-type coping strategies to manage their activity restriction reported less depressive symptoms. These findings support the research on perceived control and coping strategies, which stipulates that people who perceive control over a stressor tend to initiate action and make changes (behavioral and cognitively) rather that act more passively, by escaping, withdrawing or abandoning their efforts to deal with the stressor (Seligman, 1975; Skinner, 1996). In the context of our research, results suggest that one's belief in being able to manage OA-related activity restriction appeared to be translated into less avoidant-type coping strategies, which in turn was related to lower depressive symptoms. In other words, people who perceive personal control over activity limitation also reported a tendency to not "give up" or abandon

when confronted with such functional limitation, as well as lower depressive symptoms, which suggests better adjustment. Again, these findings are consistent with cognitive behaviour therapy of depression (Beck et al., 1979; Leahy & Holland, 2000). However, when compared to the literature review of Roesch & Weiner (2001) on the interaction between appraisals of controllability and coping strategies in physical illness, the avoidance coping component (including all types of avoidant coping strategies) as well as the cognitive avoidance coping component (individually) were both negatively related to psychological adjustment, while no links were found between attributions of controllability and behavioral avoidance-type coping, as a single component, in the prediction of psychological adjustment. The lack of significant results for behavioral avoidance coping strategies as a unique contributor of psychological adjustment might be attributable to methodological differences among the studies reviewed (e.g. measures, constructs, illnesses, study designs). Clearly, more research is needed in the field of OA to better understand the relationship between perceived control and coping strategies in the prediction of psychological outcome (e.g. anxious and depressive symptoms).

Magnitude of the variance explained in the anxiety models

Altogether, the regression models explained little variance in anxious symptoms, with the maximum variance reaching 12%. This low variance may be attributable to the choice of variables. It is possible that the inclusion of predictors with potential relevance to anxiety could have better accounted for the variance in anxious symptoms, for instance, variables such as pain, pain-related fear, antidepressant and anxiolytic medication as well as the tendency to catastrophize. For example, pain has been found to significantly predict anxiety symptoms among RA patients (Barlow et al., 1998) and it has been associated with generalized anxiety

disorder and panic disorder in various pain conditions (McWilliams, Goodwin, & Cox, 2004). Being a prominent symptom of OA (e.g., Buckwalter & Martin, 1995; Regan, 1990; Schumacher, 1988), pain might contribute to the understanding of anxious symptoms in OA patients. Pain-related fear may be another potential predictor of anxious symptoms. Various studies reported that pain-related fear was related to higher level of functional disability (Heuts et al., 2004; Peters et al., 2005; Swinkels-Meewisse et al., 2003). The use of antidepressant or anxiolytic medication may also play an important role in the prediction of anxious symptoms. A study by Parker and colleagues (2003) found that, among RA patients, the addition of an antidepressant to various treatment conditions (cognitive-behavioral, education or usual RA treatment) resulted in lower anxious and depressive symptoms among all treatment conditions, at posttreatment, 6 and 15 months follow-up, with the exception of higher anxious symptoms in the cognitive-behavioral group at the 15 month follow-up. Finally, it is possible that the inclusion of catastrophizing might hold predictive value in anxious symptoms. For instance, a study conducted by Zwemer and Deffenbacher (1984) found that catastrophizing was a significant predictor of general anxiety in undergraduate students. Based on this finding, catastrophizing can be hypothesized to contribute to the variance in anxious symptoms among OA patients.

Characteristics of sample with respect to anxiety and depression measures

Levels of anxiety symptoms and depressive symptoms reported by our sample on the HADS are similar to those reported by other studies with some medical populations (Moorey et al., 1991; Lisspers, Nugren, & Soderman, 1997). However, they are lower than the scores reported by Savard and colleagues (1998) with a sample of HIV patients and by Murphy and colleagues (1999) with a sample of RA patients. In the present study, approximately 75% of the

participants exhibited a level of anxious symptoms within the normal range (between 0 and 7), while 80% reported depressive symptoms within the normal range (between 0 and 7). Levels of anxious symptoms have been also reported to be higher than level of depressive symptoms in other studies with arthritic patients (Hawley & Wolfe, 1988; Memel, Kirwan, Sharp, & Hehir, 2000).

In the present study, mean levels of anxious symptoms were only marginally higher than mean levels of depressive symptoms. These scores of anxious and depressive symptomatology suggest that participants were not experiencing substantial psychological distress. Although these participants had been living with OA for quite a number of years and were on a waiting list for joint replacement to remedy their OA-related symptoms, their level of psychological distress, i.e. anxious and depressive symptoms was low for the majority. There may be several explanations for these results. This low distress may reflect actual psychological adjustment in chronically ill older adults. Some studies support this interpretation. Indeed, some researchers have suggested that it is at the beginning of the disablement process that anxiety peaks (Moos & Shaeffer, 1993; Schulz et al., 2000). For example, Singer, Hopman and MacKenzie (2000) found that, for many chronic illnesses such as: kidney disease, multiple sclerosis, severe osteoarthritis awaiting hip surgery, although physical functioning diminished with advancing age and the development of chronic disease, mental health remained stable. This suggests a process of psychological adjustment or adaptation to the physical difficulties encountered in older age and/or with disability. Similar results were reported by Brooks and Matson (1982) in a sample of patients with multiple sclerosis and by Cassileth and colleagues (1984), in a study on chronic medical conditions such as arthritis, diabetes, cancer, renal disease and dermatologic disorders.

Another possibility is that the sample contained a selected group of better adjusted patients. Those individuals who responded to the invitation to participate in the study (97, of which 92 participated, out of 356 letters of recruitment), may have been those in better mental health, exhibiting less anxious and depressive symptoms, adapting or living better with their disabling condition. Perhaps they were not representative of OA populations on a waiting list for arthroplasty of the hip or knee. Folkman and Moskowitz (2000) recently underlined that coping strategies such as: positive reappraisal and goal-directed problem-focused strategies (e.g. planning, resolving conflicts, engaging in task-oriented actions, acquiring resources) generate positive affect. The most frequently used coping strategies in our sample were similar, more specifically, active coping, planning, and positive reinterpretation. We can therefore speculate that the positive affect generated by these coping strategies countered anxious and depressive symptoms.

Yet another possibility is that participants underreported anxious and depressive symptoms. Levis, Conway, Brommelhoff and Merikengas (2003) found that older adults were less likely to report anxious symptoms, compared to younger adults and that they were less likely to identify anxious symptoms in another family member, who had self-reported anxious symptoms. These results suggest that older adults may minimize the reporting of anxious symptoms. Mulsant and Ganguli (1999) proposed that the same phenomenon can occur with self-report of depressive symptoms. They revealed a tendency among older depressed individuals and primary care patients to not see themselves as depressed and to report more physical symptoms than psychological symptoms.

Finally, as we indicated above, it is possible that the use of antidepressant or anxiolytic

medication may have contributed to the low occurrence of anxious and depressive symptoms. Since no assessment of such medication consumption was made in the current study, this hypothesis cannot be tested.

Strengths and Limitations of the Study

Strengths

One of the strengths of the current study is the assessment of perceived control and coping strategies toward a specific OA-related stressor, activity restriction. As the literature suggests (Giorgino et al., 1994; Newson et al., 1996; Thompson et al., 1993), perceived control can have a different impact depending on the nature of the stressor (e.g. over the cause of the illness, the course of the illness or consequences of the illness, such as daily symptoms). It is crucial to indicate what aspect of the illness or what specific type of stressor is the focus of the assessment (Thompson et al., 1993). In the same vein, research in the field of RA suggests that the adaptive value of various coping strategies depends on the nature of the illness-related stressor (Blalock, DeVellis, & Giorgino, 1995; Giorgino et al., 1994). Research in the general population also suggests that coping strategies vary according to the problems presented (Mattlin, Wethington & Kessler, 1990; Perlin & Schooler, 1978). To remedy some of those methodological flaws, the present study assessed perceived control and coping strategies in relation to activity restriction (functional disability), since it constitutes one of the main stressors in OA (e.g. van Barr et al., 1998; Verbrugge et al., 1991; Yelin et al., 1987). They were both applied to a specific activity restriction, identified by the participants, which took place in the week prior to the interview. Furthermore, it has been suggested that activity restriction can directly influence the emergence of depressive symptoms in geriatric populations (Williamson &

Schulz, 1992a). In the field of coping with arthritis, coping measures are often used with reference to arthritis as a general stressor rather that a specific arthritis-related stressor (e.g. Barlow et al., 1998; Chui et al., 2004; Hong Tak, 1998; Murphy et al., 1999; Parker et al., 1987). However, it cannot be assumed that people with a chronic condition, such as arthritis will deal in the same way with different illness-related stressors (e.g. pain, functional limitations, fatigue, interpersonal relationships, work). For instance, Giorgiono and colleagues (1994) found that RA patients perceived more control over leisure activities than for pain management and household activities. Moreover, they reported that participants more frequently applied problem solving strategies to household activities in comparison to pain management and leisure activities, whereas they used escape/avoidance strategies more often for pain management and household activities than for leisure activities. We believe that having chosen a specific OA-related stressor, activity restriction, has helped clarify the analysis of the coping process, in the sense that both perceived control and coping strategies were applied to a specific recent activity restriction event reported by the participants.

Another strength of the current study is the exploration of the interaction of perceived control with coping strategies in the prediction of anxious and depressive symptoms. Some researchers have looked at the association between perceived control and coping strategies in arthritis (Burckhardt & Bjelle, 1996; Gignac et al., 2000; Hong Tak, 1998; Parker et al., 1988; Smith, 2002; Smith & Wallston, 1992). However, none has examined the interaction effect of perceived control and coping strategies in predicting psychological outcomes. On a theoretical level, it appears important to test this interaction since approach coping has been proposed to be most effective in relation to appraisals of higher control, whereas avoidance coping has been

anticipated to be less effective in association with perceptions of higher control (Moos & Schaefer, 1993). The present study found an interaction effect between perceived control and coping strategies in the prediction of depressive symptoms, with higher perceived control combined with less use of avoidance coping strategies. In other words, when people perceived higher control over their activity restriction and used less avoidance-type coping strategies, they experienced lower depressive symptoms. Interestingly, perceived control in combination with approach-type coping was not significantly related to depressive symptoms. This means that people who exhibited higher perceived control in combination with higher use of approach-type coping strategies to manage their activity restriction did not report less depressive symptoms. Interestingly, when considered individually, higher perceived control and higher use of approach-type coping were both significantly negatively related to depressive symptoms. With regard to anxious symptoms, the combined effect of perceived control and coping strategies (with regard to both approach and avoidance strategies) was not significant. These results suggest that depressive symptomatology and anxious symptomatology relate differently to appraisals of control and coping strategies, when they are considered individually or in combination. Thus, more research is needed to better understand how psychological variables such as perceived control and coping strategies can interact to influence different aspects of psychological well-being.

Another advantage to this research is the homogeneity of the sample, a specific population consisting of francophone women, aged 60 years old and above, suffering from OA of the knee or the hip, for at least one year, and being on a waiting list for joint replacement. Having a sample of this nature reduces variance within the sample, which is helpful for multiple

regression analysis (Cone & Foster, 1997). The fact that the recruitment of participants included four recruitment settings in the region of Ottawa-Gatineau, consisting of hospital-affiliated othropaedic clinics, constitutes another advantage of this study. It increases confidence in the validity of these results for a population with the same characteristics.

Two possible psychological outcomes were considered in the current study. Many studies in the field of arthritis have focused on various psychological outcomes: depressive symptoms, negative and/or positive affect, life satisfaction or psychological well-being. Very few have assessed anxious symptoms in the context of arthritis. This study assessed both anxious and depressive symptoms and it examined how perceived control and coping strategies were associated with those two possible outcomes. The usefulness of considering anxious and depressive symptoms is underlined by the finding in the current study that the variables that predict them are different. For instance, perceived control appears to be less important in the prediction of anxious symptoms, at least for the current sample of older women with long-lasting OA. Also, a specific type of approach coping, positive reinterpretation, was relevant to lower anxious symptoms. With regard to depressive symptoms, higher perceived control, higher use of cognitive and behavioral approach coping (active coping, planning and positive reinterpretation) and lower use of behavioral avoidance coping (especially behavioral disengagement), were associated with lower depressive symptoms. Moreover, higher perceived control in combination with avoidance coping was also related to lower depressive symptoms. These different findings for anxious and depressive symptoms could be relevant in clinical work with OA populations. Interventions could focus mainly on enhancing positive reinterpretation or cognitive restructuring in anxious patients, while focusing more on increasing appraisal of perceived control and the use

of various approach-type coping, such as active strategies (behavioral activation), planning and positive reinterpretation/cognitive restructuring in depressed patients. Further empirical research examining those two possible outcomes would be needed to better understand their respective relationships with perceived control and coping strategies.

Methodological Limitations

Caution is in order regarding the interpretation of relationships among variables. Given the cross-sectional nature and the correlational design of the study, no causal relationship between variables can be asserted (Chaney et al., 1996; Tabachnick & Fidell, 2001). In order to establish causal relationships among these variables, longitudinal and controlled designs, taking into consideration the interaction of the variables across time, would be needed (Keefe et al., 2002).

The highly specific sample, although increasing homogeneity, limits the generalization of the results to other populations.

This study did not include any objective measure of functional disability. Activity restriction was assessed through a self-report measure only. The possibility of underreporting functional disability among our sample has been mentioned earlier. An objective measure of physical function (one aspect of functional disability), performed by a trained professional (e.g. the patient's rheumatologist or orthopaedist), such as the "stair climb and lift/carry tasks", to assess physical function in OA of knee (Rejeski et al., 1995), is available. It could constitute an interesting objective measure of the actual level of physical limitation in participants to be used in future research on this topic (Keefe et al., 2002).

We made no distinction between OA of the knee and the hip within our sample, because

previous research indicated that the factors associated with disability appear to be similar for both joints, for example, muscle weakness, range of joint motion and pain (van Baar, Dekker, Lemmens, Oostendorp, & Bijlsma, 1998). This being said, it might be interesting to address the type of joint afflicted (knee or hip) and compare participants on the different measures. Also, past knee or hip surgery was not taken into account. It could be useful to compare participants based on prior arthroplasty. Perhaps those who have had previous joint replacement differ in their perceived control and coping strategies with activity restriction. They might be more familiar with the activity limitations they are re-experiencing, they might also resort to prior coping strategies that were most useful in dealing with those limitations before their past arthroplasty.

In the course of this study, participants were not asked about other possible comorbid health conditions. Hence, we do not know how coexisting chronic conditions might have influenced the level of functional disability. Previous researchers (Ettinger et al., 1994; Verbrugge et al., 1991) have found that the coexisting medical problems, especially heart conditions, pulmonary disease and obesity increase the likelihood of subsequent functional disability.

As mentioned in the section on measures, the perceived control measure used in this study was translated from English to French (back translation method) and, because of time restriction and limited resources, no pilot study was conducted to assess its validity. This being said, it should be noted that internal consistency was comparable (0.89) to that reported for the English version of the subscale (0.82 to 0.87) (Dalton & Basevitz, 2002; Peacock & Wong, 1990).

Although measures were taken to increase the accuracy of self-report coping strategies (specification of the context (OA) and the stressor (a specific recent activity restriction) to which perceived control and coping strategies were applied, chosen by the participant), this method of assessing coping strategies has its limitations. For instance, there is the possibility of social desirability and self-representation, where participants would have been inclined to present themselves in a more positive light to the interviewer, reporting what they think they should have done to deal with activity restriction (Coyne & Gottlieb, 1996). There might also be the possibility that their recall of the stressful encounter and the means they took to cope with the situation was biased by various factors, such as their emotional state or their memory recollection at the time of the assessment (Coyne & Gottlieb, 1996). It is also possible that with the use of a one-time measure of coping strategies via checklist, participants reported coping strategies usually used or that have been used to deal with other problems. Such limitations could be overcome by the addition of a semistructured interview of coping strategies (Coyne & Gottlieb, 1996) or daily diaries of coping strategies towards a specific stressor, as it was done by Affleck and his team (1999) in a report of daily pain coping strategies among arthritis patients.

This study focused exclusively on the negative aspects of psychological outcome. Positive psychological outcome such as life satisfaction, positive affect or well-being were not addressed. Folkman and Moskowitz (2000) suggested that positive affect can co-occur with distress, but also that it can compensate for negative affect. They underlined the adaptive significance of positive affect in chronic illness. Having included a positive psychological outcome measure, such as a measure of positive affect, might have contributed to a more complete picture of the adaptative process in a specific chronic illness, such as OA.

As mentioned earlier, another limitation in the present study is the absence of potentially relevant variables, such as antidepressant or anxiolytic medication, pain intensity and pain-related fear. The inclusion of such variables may possibly help better explain the variance in anxious and depressive symptoms.

Future research

To date, most studies in the field of arthritis have used correlational designs. Some investigators have conducted longitudinal studies but very few carried out randomized control trials (Keefe et al., 2002) to assess the role of appraisal and coping strategies in psychological adjustment among arthritic patients. Only three psychological interventions studies for arthritis self-management have been carried out with OA patients (Barlow, 1998; Groessl & Cronan, 2000; Keefe et al., 2002). Two of those studies (Groessl & Cronan, 2000; Keefe et al. 2002) were randomized controlled trials with pre and post treatment measures testing the efficacy of pain coping skills training among knee-OA sufferers. Keefe and colleagues (2002) found that patients in the treatment group (cognitive-behavioral interventions for pain) reported significantly lower levels of pain and lower psychological disability than patients in the control group (education on OA). Also, higher perceived effectiveness of coping strategies in the treatment group was associated with lower level of post treatment physical disability. Groessl & Cronan (2000) found that among their three intervention groups (social support, education or combination of both), feelings of helplessness decreased but not in their control group. Three more studies assessed the efficacy of an arthritis self-management programme among musculoskeletal disorders, including OA and RA (Gignac, 2000, pre-post design with 3-month follow-up), RA patients (Chui, Lau & Yau, 2004, single group pre-post treatment), as well as OA

and RA patients (Barlow et al, 1998, randomized controlled study). In her study, Gignac (2000) found an increase in mastery and coping efficacy as well as a decrease in depressive symptoms following a 8-9 week psychotherapeutic group intervention targeting the use of more adaptive ways of coping (behavioral and emotional) with one's musculoskeletal condition. In Chui and colleagues (2004) as well as Barlow and colleagues (1998) found a significant increase in self-efficacy and self-management behaviours (e.g. exercise, cognitive symptoms management, communication with doctors) in the treatment group. Hence, Chui and colleagues (2004) reported higher psychological well-being, and Barlow and colleagues (1998) reported a decrease in pain, in fatigue as well as in anxiety. These studies suggest that group interventions for arthritic patients can help increase self-efficacy and control appraisals as well as enhance the use of cognitive-behavioral strategies, while helping reduce pain, fatigue and psychological distress. Furthermore, these findings suggest that control appraisals were enhanced through the use of cognitive-behavioral strategies, which is consistent with theories on the stress and coping process (Lazarus & Folkman, 1984; Moos & Schaefer, 1993). More empirical research on the efficacy of psychological treatments in the management of arthritis would be needed to better understand the possible benefits of interventions aimed at increasing perceived control and enhancing the use of approach-type coping.

Morley, Eccleston and Williams (1999) performed a systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for pain in adults (including RA/OA and excluding headaches). They found that, compared with other active treatments (e.g. structured group social support therapy, standard routine care, occupation therapy, physiotherapy), cognitive-behavioral treatments demonstrated greater changes in pain

reduction, higher use of positive cognitive coping strategies and appraisal (e.g. catastrophization), as well as reduced behavioral expression of pain. They did not find significant differences among treatments regarding mood/affect and negative coping strategies and appraisal. Again, these results suggest that cognitive-behavioral interventions can be helpful in the management of illness-related stressors, such as chronic pain. Savelkoul and colleagues (2003) found, in their review of controlled group intervention studies in arthritis (14 studies in total), that self-management skills were associated with an increase in active problem-focused and social support, as well as a decrease in functional disability and depressive symptoms. The authors indicated that the differences in terms of treatments and outcome measures made it difficult to compare studies. In general, however, their review suggests that self-management interventions can help increase active coping and decrease functional disability as well as depressive symptoms.

Randomized controlled studies testing the efficacy of various treatments options for OA patients are warranted (Keefe et al., 2002). The present study clearly indicates that perceived control and specific types of coping strategies (higher use of active coping, planning and positive reinterpretation, as well as lower use of behavioral disengagement) are related to lower depressive symptoms, and that higher use of one type of coping strategy, positive reinterpretation is related to lower anxious symptoms. Based on these findings, a randomized controlled trial comparing an educational intervention group (e.g. education of OA, its consequences and treatment), a support group (sharing of OA experience, no specific intervention), a cognitive-behavioral group (aimed at increasing perceived control and approach-type coping strategies) and a waiting list (control group with the possibility of receiving one of the treatment conditions after

the completion of the study) could help shed some light on the usefulness of perceived control and approach-type coping. Such a design could also offer the possibility of identifying the possible causal role of perceived control and coping strategies in the adaptation to OA, with the use of adequate pre-post treatment standardized measures.

Interestingly, the study conducted by Parker and colleagues (2003) suggests that the combination of an antidepressant with the usual medical treatment of RA did not only impact on psychological distress but also on perceived control and coping strategies. This research team randomly assigned RA patients to three treatment conditions: a) CBT with an antidepressant, b) education with an antidepressant, and c) regular medical treatment for RA combined with an antidepressant. After the 10 weeks treatment, all experimental conditions exhibited lower depressive symptoms, as well as lower helplessness at posttreatment, 6 month and 15 month follow-ups. Anxiety symptoms were significantly lower for all conditions at posttreatment and 6 month follow-up, however, at 15month follow-up, they significantly increased in the CBT and antidepressant condition in comparison to the other two conditions. The three conditions were combined for further analyses. These revealed higher use of pain control and rational thinking coping strategies as well as higher coping attempts at posttreatment, 6 and 15 month follow-up in comparison to baseline levels. Overall these results suggest that the combination of an antidepressant with the usual medical regiment of RA patients or with other forms of treatment/service (e.g. CBT, education) may generate higher perceived control, more active coping strategies and lower anxious and depressive symptoms. Unfortunately, the study was lacking a control group (without an antidepressant). It appears important to replicate this study in RA and OA samples, with the addition of a control group (e.g., waiting list or usual medical RA

regiment without antidepressant), to better understand the role of antidepressant medication on psychological variables in rheumatic patients.

In future research it would also seem relevant to assess perceived efficacy of coping strategies, in addition to simply the frequency of use of coping strategies. Previous research suggests that people's appraisals of their personal efficacy in coping with chronic stressors are related to their psychological health (Aldwin & Revenson, 1987; Zautra & Wrabetz, 1991). The evaluation of coping efficacy could help elucidate how efficient and useful people feel their coping strategies are in managing illness-related stressors, such as activity restriction. For example, Gignac and colleagues (2000) found that OA patients receiving help with in-home mobility and community mobility reported lower coping efficacy. They also reported that the use of selection strategies (e.g. giving up or limiting one's activities) for community mobility, the use of optimization strategies (e.g. increase time and effort on activities, planning ahead) for in-home mobility, as well as, the use of compensation strategies (e.g. behaviour modification or use of devices) for personal care and in-home mobility were related to lower coping efficacy. These results suggest that people felt they were coping less effectively when they had to give up or to limit optional activities (e.g. going out, shopping), when they had to use assistive devices or to modify their actions for personal care or in-home ambulation, when they had to invest more time or effort and more planning on in home-mobility or when they received help with in-home and community mobility. In another study (Giorgino et al., 1994), the use of optimization was not related to lower coping efficacy in RA patients. However, greater arthritis disability was related to less satisfaction with ability to perform an activity and to manage pain. It appears that coping efficacy with various ways of adaptation varies across domain or stressors. In other words, what

one considers an efficient way of dealing (e.g. compensation) within a specific life domain (e.g. community mobility) might no be judged as effective in another personal domain (in-home mobility). The assessment of coping efficacy in future research on coping with OA could provide additional information on conditions in which coping strategies are more efficient.

Since research strongly suggests that activity restriction mediates the relationship between physical illness and depressive symptoms (e.g. Williamson & Shaffer, 2000), it might be interesting, in future research, to compare OA patients awaiting arthroplasty on functional disability and psychological outcome measures before and after surgery. This would allow to examine the role of arthroplasty in the relationship between activity restriction and depressive symptoms. Once activity limitation has been decreased or eliminated, following joint replacement, what happens to depressive symptoms? If they remain, further investigation could be directed at explaining the maintenance of depressive symptoms following the removal or reduction of activity restriction (e.g. sociodemographic variables, presence of other medical conditions, psychological variables such as perceived control, coping strategies and social support). Results from one study (Williams et al., 1997) suggest that following hip and knee replacements among Ontario patients, lower pain and functional limitations were reported (WOMAC and SF-36 scores), while no changes on mental health scores (SF-36) were found. Interestingly, an impact could be noticed on pain and functional disability but not on psychological measures. As suggested, it would be interested to conduct further study to examine pre and post arthroplasty results to be better under the relationship between OA-related stressors (e.g. activity restriction and pain) and psychological measures.

In order to better understand the disablement process in the OA population, longitudinal

studies could assess the relationship among variables such as perceived control, coping strategies, anxiety symptoms, depressive symptoms and positive affect across time. Perhaps such studies could help elucidate the relationship between perceived control and anxiety in OA patients. Since some researchers (Maser & Cloninger, 1990; Schulz et al., 2000) have proposed that anxiety tends to manifest earlier in the disablement process, when functional disability is anticipated and constitutes a threat, its assessment over time might help verify this assumption. Initial assessment, earlier in the disablement process (once OA becomes incapacitating), followed by subsequent assessments 1 year, 2 years and 5 years later could provide a better understanding of the evolution of the interactions and relationships among the above-mentioned variables. For instance, such a design could help explain how anxious and depressive symptoms emerge, increase and/or are maintained in OA patients and how these symptoms can further influence the level of activity restriction, the perception of control and the coping strategies used to deal with the OA-related activity limitations.

Research suggests that pain is more strongly associated with physical activity (lower extremity function, as measured by the AIMS) in OA compared to RA (Mason et al., 1989). A number of studies indicate that pain is associated with lower level of physical functioning in OA patients (Croft et al., 2002; Davis, Ettinger, Neuhaus, & Mallon, 1991; Heuts et al., 2004; Ling et al., 2003; van Baar et al., 1998). Based on a previous study on pain, activity restriction and depressed affect in older adults with various physical illnesses (Williamson & Schulz, 1992a), Williamson (2000a) conducted path analysis which suggested that pain had a small direct influence on depressive symptoms, and a direct effect on activity restriction, and that in turn, activity restriction directly affected depressed affect. These results suggest that pain is a source

of activity restriction, which in turn, may influence depressive symptoms. Pain was also reported to directly influence arthritis helplessness, which in turn impacted on depressive symptoms in Smith and Wallston's (1992) longitudinal RA study. During the data collection of our study, while assessing activity restriction and coping strategies, many participants reported activity limitations due to OA pain. Unfortunately, no measure of pain was included in this study. It would be recommended that future research include the assessment of both activity restriction and arthritis-related pain, and examine how they both relate to psychological outcome. It would also be interesting to explore if and how perceived control and coping strategies with these different arthritis-related stressors differ.

Clinical implications

Together with authors such as Williamson (2000a) this study makes the point that, when assessing the impact of functional disability on psychological adjustment in interventions, it is important to identify how people respond to functional disability (appraisal and coping strategies).

This study showed that higher perceived control and approach-type coping strategies (cognitive and behavioral) are both individually associated with lower depressive symptoms. When the interaction of perceived control with coping strategies was examined, higher perceived control combined with lower use of avoidance-type coping strategies contributed to lower depressive symptoms. It also found that specific subtypes of approach coping are related to lower depressive symptoms: active coping, planning and positive reinterpretation. With regard to anxious symptoms, only approach coping was associated with, and predicted lower anxious symptoms. Positive reinterpretation in particular was associated with lower anxiety symptoms.

These findings could be useful in the development of treatment protocols aimed at increasing self-management of OA activity restriction with different focus for intervention. To reduce anxious symptoms, interventions could aim a higher use of positive reappraisal. To reduced depressive symptoms, the interventions could aim at increasing perceived control and approach-type (active coping, planning and positive reinterpretation) coping with activity restriction in a more adaptive manner. A cognitive-behavioral protocol could be designed to increase perceived control by helping patients identify what they can still do and the areas/activities of their lives over which they can still exert some control. Even when confronted with a very low control situation, it is possible to find some aspect of the situation over which influence or control can occur (Thompson et al., 1993). The use of cognitive and behavioral approach-type coping strategies, such as planning, positive reinterpretation/cognitive restructuring and active coping could be promoted. Active coping could include: the adaptation of physical environment to promote independence and mobility, the use of assistive devices and/or medication (to reduce inflammation and pain), stretching exercises, prioritizing of activities/tasks and pacing oneself in performing activities. Planning could imply the establishment of flexible goals, while positive reinterpretation/cognitive restructuring could involve the use of social downgrading comparison, acceptance and humour. Acceptance of one's situation is said to help diminish a sense of helplessness (Thompson & Kyle, 2000).

The importance of perceived control and coping strategies in the relationship between functional disability and depressive symptoms offers the possibility to target psychological variables other than the psychological distress (e.g. depressive or anxiety symptoms) for treatment. Ordinarily, the focus of intervention might be to reduce depressive or anxious

symptoms directly by prescribing pharmacological or psychological treatment aimed at alleviating those symptoms. The findings of this study suggest interventions aimed at increasing perceived control, cognitive and behavioral approach coping strategies as other targets of intervention. The finding that both behavioral and cognitive approach-type coping strategies relate to lower depressive symptoms further suggests that older adults who take an active part (behaviorally and cognitively) in their management of activity restriction experience less psychological distress. This underlines the importance for mental health professionals to encourage older adults suffering from OA to take an active role in the management of their condition.

Older adults are known to consult their general practitioner (GP) for the majority of their health problems, including psychological symptoms (Katona, Manela, & Livingston, 1997). Primary care appears to be an appropriate context for the creation of services offering multi-disciplinary interventions with older adults (Gallo & Lebowitz, 1999). Mental-health professionals, such as psychologists, can collaborate with physicians at several levels. One of those levels is the promotion of information/education on the relevance of perceived control and coping with activity restriction in adaptation to OA (e.g. conferences or workshops in the medical setting or distribution of a pamphlet). With this kind of information, primary care practitioners could rapidly assess perceived control and coping strategies by simple questions such as: "Do you believe you have the ability to do well in this situation?" or "Do you believe you have what it takes to do well in this situation?" (perceived control); "How do you deal with this situation?" (coping strategies). Physicians could recognize low perception of control over activity restriction and less adaptive ways of coping. A referral to a mental health professional would then allow for

another level of collaborative care. Cognitive-behavioral strategies could be applied, including: psychoeducation, skills training on how to enhance perceived control over functional disability, and increase the use of active coping, planning and positive reinterpretation to better cope with activity restriction. By attending to those psychological symptoms, at an intermediate level, through appraisal of control and coping strategies, health professionals might help reduce the use of medical service (Groessl & Cronan, 2000). General practitioners could also refer OA patients exhibiting moderate to severe depressive and/or anxious symptoms for a psychological intervention (cognitive behaviour therapy) that would target those symptoms. A randomized controlled trial conducted by Lin and colleagues (2006) yielded interesting results about the efficacy of improving depressive symptoms on pain and functional disability among older adults with arthritis (mostly OA) and comorbid major depression, dysthymia or both. They found that, participants in the experimental group, following a 6-8 session educational and behavioral activation program, in comparison to the control group (usual pharmacological treatment), exhibited a significant reduction in depressive symptoms, as well as a significant decrease in pain intensity and OA activity restriction at 12-month follow-up. These results suggest that psychological treatment focusing on depressive symptomatology can not only promote a reduction in depressive symptoms but that it can also have an indirect effect on arthritis-related pain and functional limitations. Such findings are in line with the research of Ormel and colleagues (2002) and of Bruce and colleagues (1994) who found that depressive symptoms had an impact on functional status over time among community-dwelling older adults. Thus, just as the manifestation of depressive symptoms can negatively impact functional disability, a decrease in depressive symptomatology can also promote a reduction in functional limitation. Such

findings might be explained by a reduction in depressive symptoms such fatigue, sleep and/or appetite problems and lack of motivation, through behavioral activation (being more active), which was followed by an improvement in functional ability (Gurland et al., 1988; Penninx et al., 1998). It is also possible that the newly acquired ways of coping with depression were generalized to the management of pain (Lin et al., 2006).

Conclusion

OA is a prevalent chronic illness in older adults. One of its disabling effects, activity restriction, can lead to psychological distress. Perceived control and coping strategies are associated with psychological distress. This study examined the relationship between perceived control and coping strategies with regard to activity restriction, individually and combined, on both anxious and depressive symptoms, in a sample of older women awaiting knee or hip arthroplasty. Perceived control and coping strategies related differently to both outcomes. For instance, perceived control and avoidance-type coping were associated with depressive symptoms only. Higher perceived control, higher use of approach-type coping strategies and lower use of avoidance-type coping were related to lower depressive symptoms, separately. When perceived control combined with coping strategies was taken into consideration, only higher perceived control in interaction with lower avoidance-type coping was related to lower depressive symptoms. Specific types of coping strategies were negatively related (active coping, planning and positive reinterpretation) and positively associated (behavioral disengagement) with depressive symptoms. With regard to anxious symptoms, only higher approach coping, particularly positive reinterpretation, was associated with lower symptomatology.

Longitudinal and empirical research is needed on the relationships among cognitive

appraisal (e.g. perceived control) and coping strategies with regard to various OA-related stressors (e.g. activity restriction and pain) in order to elucidate the direction of the relationships. There is also a need for research at different stages of the disablement process in OA, in order to better understand the evolution of functional disability and its relationship with psychosocial variables (e.g. perceived control, coping strategies, anxious symptoms, depressive symptoms, and positive affect). With a better understanding of successful adaptation with OA-related stressors, efficient psychological interventions could be designed.

References

Abdel-Nasser, A.M., El-Azim, S.A., Tall, E., El-Badawy, S.A., Rasker, J.J., & Valkenburg, H.A. (1998). Depression and depressive symptoms in rheumatoid arthritis patients: an analysis of their occurrence and determinants. *British Journal of Rheumatology, 37*, 391-397.

Abrahamson, L.Y., Seligman, M.E.P., & Teasdale, J.D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87*, 102-109.

Adams, J., & Lindemann, E. (1974). Coping strategies with long term disability. In G. Coelho, D. Hamburg & J. Adams (Eds.). *Coping and adaptation.* New York: Basic Books, pp.127-138.

Affleck, G., Tennen, H., Pfeiffer, C., & Fifield, J. (1987). Appraisals of control and predictability in adapting to a chronic disease. *Journal of Personality and Social Psychology, 2*, 273-279.

Affleck, G., Tennen, H., Keefe, F.J., Lefebvre, J.C., Kashikar-Zuck, S., Wright, K., et al. (1999). Everyday life with osteoarthritis or rheumatoid arthritis: independent effects of disease and gender on daily pain, mood, and coping. *Pain, 83*, 601-609.

Aldwin, C.M., & Revenson, T.A. (1987). Does coping help? A re-examination of the relation between coping and mental health. *Journal of Personality and Social Psychology, 53*, 337-348.

Agüero-Torres, Hilleras, P.K., & Winblad, B. (2001). Disability in activities of daily living among the elderly. *Current Opinion in Psychiatry, 14*, 355-259.

Alexopoulos, G.A., Vrontou, C., Kakuma, T., Meyers, B.S., Young, R.C., Klausner, E., et al. (1996). Disability in geriatric depression. *American Journal of Psychiatry, 153*, 877-885.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th Ed.), text revision. Washington DC: American Psychiatric Press.

Andersson, S.I., & Ekdahl, C. (1992). Self-appraisal and coping in out-patients with chronic disease. *Scandinavian Journal of Psychology, 33*, 289-300.

Arbuckle, T.Y., Pushkar, D. Chaikelson, J., & Andres, D. (1999). Coping and control processes: Do they contribute to individual differences in health in older adults? *Canadian Journal on Aging, 18*, 285-312.

Averill, J.R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin, 80*, 286-303.

Badley, E.M. (1995). The effect of osteoarthritis on disability and health care use in Canada. *Journal of Rheumatology, suppl. 43*, 19-22.

Badley, E.M., Rasooly, I., & Webster, G.K. (1994). Relative importance of musculoskeletal disorders as a cause of chronic health problems, disability, and health care utilization: Findings from the 1990 Ontario Health Survey. *Journal of Rheumatology, 21*, 505-514.

Badley, E.M., Webster, G.K., & Rassoly, I. (1995). The impact of musculoskeletal disorders in the population: are they just aches and pains? Findings from the 1990 Ontario Health Survey. *Journal of Rheumatology, 22*, 733-739.

Baltes, M.M., & Baltes, P.B. (1986). *The psychology of control and aging*. Hillsdale, New Jersey: Erlbaum.

Baltes, P.B., & Baltes, M.M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P.B. Baltes & M.M. Baltes (Eds.). *Successful aging: Perspectives from the behavioural sciences* (pp.1-34). Cambridge,

England: Cambridge University Press.

Barlow, J. (1998). Setting a research agenda for psychosocial rheumatology. *Journal of Psychosomatic Research, 44*, 619-623.

Barlow, J.H., Turner, A.P., & Wright, C.C. (1998). Sharing, caring and learning to take control: Self-management training for people with arthritis. *Psychology, Health & Medicine, 3*, 387-404.

Beck, A.T. (1972). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.

Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). Cognitive therapy of depression. New York: The Guilford Press.

Beekman, A.T.F., Copeland, J.R.M., & Prince, M.J. (1999). Review of community prevalence of depression in later life. *British Journal of Psychiatry, 174*, 307-311.

Beekman, A.T.F., Penninx, B.W.J.H., Deeg, D.J.H., Ormel, J., Braam, A.W., & van Tilburg, W. (1997a). Depression and physical health in later life: Results from the Longitudinal Aging Study Amsterdam (LASA). *Journal of Affective Disorders, 46*, 219-231.

Beekman, A.T.F., Deeg, D.J.H., Braam, A.W., Smit, J.H., & van Tilburg, W. (1997b). Consequences of major and minor depression in later life: A study of disability, well-being and service utilization. *Psychological Medicine, 27*, 1397-1409.

Beekman, A.T.F., Deeg, D.J.H., van Tilburg, T., Smit, J.HJ., Hooijer, C., & van Tilburg, W. (1995). Major and minor depression in later life: A study of prevalence and risk factors. *Journal of Affective Disorders, 36*, 65-75.

Beekman, A.T.F., de Beurs, E., van Balkom, A.J.L.M., Deeg, D.J.H., van Dyck, R. & van

Tilburg, W. (2000). Anxiety and depression in later life: Co-occurrence and communality of risk factors. *American Journal of Psychiatry, 157*, 89-95.

Beekman, A.T.F., Bremmer, M.A., Deeg, D.I.H., vanBalkom, A.J.I., Smit, J.H., de Beurs, E., et al. (1998). Anxiety disorders in later life: A report from the Longitudinal Aging Study Amsterdam. *International Journal of Geriatric Psychiatry, 13*, 717-726.

Belding, M.A. Iguchi, M.Y., Lamb, R.J., Lakin, M., & Terry, R. (1996). Coping strategies and continued drug use among methadone patients. *Addictive Behaviors, 21*, 389-401.

Bendsten, P., & Hornquist, J. (1994). Rheumatoid arthritis, coping and well-being. Cross-sectional sub-group comparisons and correlational analyses. *Scandinavian Journal of Social Medicine, 22*, 97-106.

Berkman, L.F., Berkman, C.S., Kals, S., Freeman D.H., Leo, L., Ostfeld, A.M., Cornoni-Huntley, J., & Brody J.A. (1986). Depressive symptoms in relation to physical health and functioning in the elderly. *American Journal of Epidemiology, 124*, 372-388.

Bickenbach, J.E., Chatterji, S., Badley, E.M., & Üstün, T.B. (1999). Models of disablement, universalism and the international classification of impairments, disabilities and handicaps. *Social Science & Medicine, 48*, 1173-1187.

Bienenstrock, H., & Fernando K.R., Arthritis in the elderly. An overview. *Medical Clinics of North America, 60*, 1173-1189.

Billings, A.G., & Moos, R.H. (1984). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine, 4*, 139-157.

Bjelland, I., Dahl, A.A., Tangen Haug, T., & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale. An updated literature review. *Journal of*

Psychosomatic Research, 52, 69-77.

Blalock, S.J., De Vellis, B.M., & Giorgino, K.B. (1995). The relationship between coping and psychological well-being among people with osteoarthritis: A problem-specific approach. *Annals of Behavioral Medicine, 17*, 107-115.

Blazer, D.G. (1994). Epidemiology of late-life depression. In L.J. Schneider, C.F. Reynolds III, B.D. Lebowitz & A.J. Freidhoff (Eds.). *Diagnosis and treatment of late life depression: Results of the NIH Consensus Development Conference* (pp. 9-21). Washington DC: American Psychiatric Press.

Blazer, D., Bachar, J., & Hughes, D.C. (1987). Major depression with melancholia: a comparison of middle aged and elderly adults. *Journal of American Geriatric Society, 35*, 927-932.

Blixen, C.E., & Kippes, C. (1999). Depression, social support, and quality of life in older adults with osteoarthritis. *Journal of Nursing Scholarship, 31*, 221-226.

Bouchard, S., & Rivière, B (2000). Les troubles anxieux. In P. Cappeliez, P. Landreville & J. Vézina (Eds.). *Psychologie clinique de la personne âgée (pp. 43-75)*. Ottawa : Les Presses de l'Université d'Ottawa Masson.

Bouffard, M., & Crocker, P.R. (1992). Coping by individuals with physical disabilities with perceived challenge in physical activity: Are people consistent? *Research Quarterly for Exercise and Sport, 63*, 410-417.

Brenner, G.F., Melamed, B.G., & Panush, R.S. (1994). Optimism and coping as determinants of psychosocial adjustment to rheumatoid arthritis. *Journal of Clinical Psychology in Medical Settings, 1*, 115-134.

Brooks, N.A., & Matson, R.R. (1982). Social-psychological and adjustment to multiple sclerosis. *Social Science and Medicine, 16*, 2129-2135.

Bruce, M. (1999). The association between depression and disability. *American Journal of Geriatric Psychiatry, 7*, 8-11.

Bruce, M.L. (2000). Depression and disability. In G.M. Williamson, D.R. Shaffer & P.A. Parmelee (Eds). *Physical illness and depression in older adults. A handbook of theory, research, and practice.* (pp. 11-29). Netherlands: Kluwer Academic Publishers.

Bruce, M.L., & Hoff., R.A. (1994). Social and physical health risk factors for first-onset major depressive disorder in a community sample. *Social Psychiatry & Psychiatric Epidemiology, 29*, 165-171.

Buckwalter, J.A., & Martin J. (1995). Degenerative joint disease. *Clinical Symposia. 47*, 1-32,

Buntrock, C.N., & Reddy, D.M. (1992). Coping disposition and the stress appraisal process: The impact of defensiveness on emotional response to threat. *Journal of Personality and Individual Differences, 13*, 1223-1231.

Burckhardt, C.S., & Bjelle, A. (1996). Perceived Control: A comparison of women with fibromyalgia, rheumatoid arthritis, and systemic lupus erythematosus using a Swedish version of the Rheumatology Attitudes Index. *Scandinavian Journal of Rheumatology, 25*, 300-306.

Burke, M., & Flaherty, M.J. (1993). Coping strategies and health status of elderly arthritic women. *Journal of Advanced Nursing, 18*, 7-13.

Byrne, D.G. (1981). Sex differences in the reporting of symptoms of depression in the general population. *British Journal of Clinical Psychology, 20,* 83-92.

Calfas, K.J., Kaplan, R.M., & Ingram, R.E. (1992). One-year evaluation of cognitive-behavioral intervention in osteoarthritis. *Arthritis Care & Research, 5*, 202-209.

Cappeliez, P., & Blanchet, D. (1986). Les stratégies d'adaptation des personnes âgées aux prises avec des sentiments dépressifs. *La Revue canadienne du vieillissement, 5*, 125-133.

Carver, C.S., & Scheier, M.F. (1994). Situational coping and coping dispositions in a stressful encounter. *Journal of Personality and Social Psychology, 66*, 184-195.

Carver, C.S., Scheier, M.F., & Weintraub, J.K. (1989). Assessing coping strategies: A theoretically based approached. *Journal of Personality and Social Psychology, 56*, 267-283.

Cassileth, B.R., Lusk, E.J., & Strouse, T.B. (1984). Psychosocial status in chronic illness. A comparative analysis of six diagnostic groups. *New England Journal of Medicine, 311*, 506-511.

Chaney, J.M., Mullins, L., Uretsky, D.L., Doppler, M.J., Palmer, W.R., Wees, S.J., et al. (1996). Attributional style and depression in rheumatoid arthritis: the moderating role of perceived illness control. *Rehabilitation Psychology, 41*, 205-223.

Chipperfield, J.G., & Greenslade, L. (1999). Perceived control as a buffer in the use of health care services. *Journal of Gerontology, Psychological Sciences, 3*, 146-154.

Chui, D.Y.Y., Lau, J.S.K., & Yau, I.T.Y. (2004). An outcome evaluation study of rheumatoid arthritis self-management program in Hong Kong. *Psychology, Health & Medicine, 9*, 286-292.

Clark, D.M. (1996). Anxiety states. Panic and generalized anxiety. In K. Hawton, P.M. Salkovskis, J. Kirk & D.M. Clark (Eds). *Cognitive Behaviour Therapy for Psychiatric*

Problems. A Practical Guide (pp. 52-96). New York: Oxford Medical Publications.

Clark, D.A., Cook, A., & Snow, D. (1998). Depressive symptom differences in hospitalized, medically ill, depressed psychiatric inpatients and nonmedical controls. *Journal of Abnormal Psychology, 107*, 38-48.

Cohen, F., & Lazarus, R.S (1972). Coping with the stresses of illness. In G.C. Stone, F. Cohen, & N.E. Adler (Eds.). *Health psychology* (pp. 217-254). San Francisco: Jossey-Bass.

Cohen, F., & Lazarus, R.S. (1973). Active coping processes, coping dispositions, and recovery from surgery. *Psychosomatic Medicine, 35*, 375-389.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.

Cone J.D., & Foster, S.L. (1997). *Dissertations and theses from start to finish.* Washington DC: American Psychological Association.

Cooper, C. (1995). Occupational activity and the risk of osteoarthritis. *Journal of Rheumatology, suppl. 43*, 10-12.

Coyne, J.C., & Gottlieb, B.H. (1996). The mismeasure of coping via checklist. *Journal of Personality, 4*, 959-991.

Creamer, P, Lethbridge-Cejku, M., Costa, P., Tobin, J.D., & Herbst, J.H. (1999). The relationship of anxiety and depression with self-reported knee pain in the community: Data from the Baltimore Longitudinal Study of Aging. *Arthritis Care and Research, 12*, 3-7.

Croft, P. Lewis, M. Jones, C.W., Coggon, D., & Cooper, C. (2002). Health status in patients awaiting hip replacement for osteoarthritis. *Rheumatology, 41*, 1001-1007.

Cummings, J.L. (1992). Depression and Parkinson's disease: A review. *American Journal of Psychiatry, 4*, 443-454.

Cutrona, C., Russell, D., & Rose, J. (1986). Social support and adaptation to stress by the elderly. *Journal of Psychology and Aging, 1*, 47-54.

Davis, M.A., Ettinger, W.H., Neuhaus, J.M., & Mallon, K.P. (1991). Knee osteoarthritis, and physical functioning: Evidence from the NHANES 1 Epidemiologic Follow-up Study. *Journal of Rheumatology, 18*, 591-598.

de Beurs, E., Beekman, A.T.F., van Balkom, A.J.L.M., Deeg, D.J.H., van Dyck, R., & van Tilburg, W. (1999). Consequences of anxiety in older persons: its effect on disability, well-being and use of health services. *Psychological Medicine, 29*, 583-593.

De Ridder, D. (1997). What is wrong with coping assessment? A review of conceptual and methodological issues. *Psychology and Health, 12*, 417-431.

DeForge, B.R. & Sobal, J. (1986). Psychological evaluation of well-being in the multidisciplinary assessment of osteoarthritis. *Clinical Therapeutics, supp. B.*, 53-63.

Dent, O.F., Waite, L.M., Bennett, H.P., Casey, B.J., Grayson, D.A., Cullen, J.S., et al. (1999). A longitudinal study of chronic disease and depressive symptoms in a community sample of older people. *Aging & Mental Health, 3*, 351-357.

Dowdy, S.W., Dwyer, K.A., & Wallston, K.A. (1996). Gender and psychological well-being of persons with rheumatoid arthritis. *Arthritis Care & Research, 9*, 449-456.

Downe-Wambolt, B. (1991). Stress, emotions, and coping: A study of elderly women with osteoarthritis. *Health Care for Women International, 12*, 85-98.

Downe-Wamboldt, B.L., & Melanson, P.M. (1995). Emotions, coping, and psychological well-being in elderly people with arthritis. *Western Journal of Nursing Research, 17*, 250-265.

Downe-Wamboldt, B.L., & Melanson, P.M. (1998). A causal model of coping and well-being in

elderly people with arthritis. *Journal of Advances Nursing, 27*, 1109-1116.

Eastwood, M.R., Rifat, S.L., Nobbs, H., & Ruderman, J. (1989). Mood disorder following cerebrovascular accident. *British Journal of Psychiatry, 154*, 195-200.

Elkis-Abuhoff, D. (2002). The impact of coping strategies, negative life events and health locus of control for persons living with the pain of osteoarthritis. *Dissertation Abstracts International,* Section B: *The Sciences and Engineering, 63(8-B)*. (UMI No. 3061986)

Epstein, W.V., Yelin, E.H., Nevitt, M., & Kramer, J.S. (1986). Arthritis: A major health problem of the elderly. In R.W. Moskowitz, M.R. Haug (Eds.). *Arthritis and the Elderly (pp.)*. New York: Springer, pp. 5-17.

Ernst, C., & Angst, J. (1995). Depression in old age. Is there a real decrease in prevalence? A review. *European Archives of Psychiatry and Clinical Neursciences, 245*, 272-287.

Ettinger, W.H., Davis, M.A., Neuhaus, J.M., & Mallon, K.P. (1993). Long-term physical functioning in persons with knee osteoarthritis from NHNES I: Effects of comorbid medical conditions. *Journal of Clinical Epidemiology, 47*, 809-815.

Felson, D.T. (1990). Osteoarthritis. *Rheumatic Disease Clinics of North America, 16*, 499-512.

Felson, D.T., Naimark, A., Anderson, J., Kazis, L., Castelli, W., & Meenan, R.F. (1987). The prevalence of knee osteoarthritis in the elderly. The Framingham Osteoarthritis Study. *Arthritis and Rheumatism, 8*, 914-918.

Felton, B.J., & Revenson, T.A. (1984). Coping with chronic illness: A study of illness controllability and the influence of coping strategies on psychological adjustment. Journal Consulting and Clinical Psychology, 52, 343-353.

Felton, B.J., Revenson, T.A., & Hinrichsen, G.A. (1984). Stress and coping in the explanation of

psychological adjustment among chronically ill adults. *Social Science Medicine, 10*, 889-898.

Ferell, B.A. (1991). Pain management in elderly people. *Journal of the American Geriatric Society, 39*, 64-73.

Fernandez, F., Levy, J.K., Lachar, B.L., & Small, G.W. (1995). The management of depression and anxiety in the elderly. *Journal of Clinical Psychiatry, suppl.2*, 20-29.

Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology, 4*, 839-85.

Folkman, S., & Lazarus, R.S. (1980). An analysis of coping in a middle aged community sample. *Journal of Health & Social Behaviour, 21*, 219-239.

Folkman, S., & Lazarus, R.S. (1985). If it changes it must be a process: Study of emotion and coping three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.

Folkman, S., & Lazarus, R. (1986). Stress process and depressive symptomatology. *Journal of Abnormal Psychology, 48*, 107-113.

Folkman, S., & Lazarus, R. (1991). Coping and emotion. In A. Monat & R. S. Lazarus (Eds.). *Stress and Coping: An Anthology* (pp. 207-227). New York: Oxford Columbia University Press.

Folkman, S., & Moskowitz, J.T. (2000). Positive affect and the other side of coping. *American Psychologist, 6*, 647-654.

Folstein, M.F., Folstein, S.E., & McHugh, P.R. (1975). "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric*

Research, 3,189-98.

Forsyth, G.L., Delaney, K.D., & Gresham, M.L. (1984). Vying for a winning position: Management style of the chronically ill. *Research in Nursing and Health, 3*, 181-188.

Frederikson, L.G., & Dewe, P.J. (1996). A longitudinal study of appraisal and coping using repeated measures of stressor, importance, frustration and coping response. *Stress Medicine, 12*, 81-91.

Fried, L.P., & Guralnik, J.M. (1997). Disability in older adults: Evidence regarding significance, etiology, and risk. *Journal of the American Geriatrics Society, 45,* 92-100.

Friedland, J., & McColl, .M.A. (1992). Disability and depression: Some etiological considerations. *Social Science & Medicine, 4*, 395-403.

Fuentes, K., & Cox, B. (2000). Assessment of anxiety in older adults: A community-based survey and comparison with younger adults. *Behaviour Research and Therapy, 3*, 297-309.

Gallo, J.J., & Lebowitz, B.D. (1999). The epidemiology of common late-life mental disorders in the community: Themes for the new century. *Mental Health and Aging, 9*, 1158-1166.

Gallo, J.J., & Rabins, P.V. (1999). Depression without sadness: Alternative presentations of depression in late life. *American Family Physician, 3*, 820-826.

Garner, J.D., & Kinderknecht, C.H. (1993). Living productively with arthritis. In J.D. Garner & A.A.Young (Eds). Women and healthy aging: *Living productively in spite of it all* (pp. 61-82). New York: Harrington Park Press/Haworth Press, Inc.

Gignac, M.A.M. (2000). An evaluation of a psychotherapeutic group intervention for persons

having difficulty coping with musculoskeletal disorders. *Social Work in Health Care, 32*, 57-75.

Gignac, M.A.M., & Cott, C. (1998). A conceptual model of independence and dependence for adults with chronic physical illness and disability. *Social Science & Medicine, 6*, 739-753.

Gignac, M.A.M., Cott, C., & Badley, E.M. (2000). Adaptation to chronic illness and disability and its relationship to perceptions of independence and dependence. *Journal of Gerontology: Psychological Sciences, 6*, P362-P372.

Gignac, M.A.M., Cott, C., & Badley, E.M. (2002). Adaptation to disability: Applying selective optimization with compensation to the behaviors of older adults with osteoarthritis. *Psychology and Aging, 17*, 520-524.

Gilliland, B., & Mannik, M. (1983). Rheumatoid arthritis. In R. Pertersdorf, A. Weintrobe, R. Adams & al., (Eds.) *Harrison's Principles of Internal Medicine* (10th ed.). New York: McGraw Hill.

Giorgino, K.B., Blalock, S.J., DeVellis, R.F., DeVellis, B.M., Keefe, F.J., & Jordon, J.M. (1994). Appraisal of and coping with arthritis-related problems in household activities, leisure activities, and pain management. *Arthritis Care and Research, 1*, 20-28.

Gold, D.T. (1994). Chronic musculoskeletal pain: older women and their coping strategies. In Roberto, K.A. (Eds.). *Older women with chronic pain* (pp. 43-58) New York: The Haworth Press Inc.

Gorsuch, R.L. (1983). *Factor analysis*. Hillsdale, New Jersey: Lawrence Erlbaum.

Granville-Grossman, K. (1983). Mind and body. In M.H. Lader (Ed.). *Handbook of Psychiatry,*

Mental Disorders and Somatic Illness (pp. 5-13). New York: Cambridge University Press.

Greene, A.F., Johnson, K.R., & Melamed B.G. (1991). Perceived control and coping in rheumatoid arthritis patients. *Arthritis Care & Research, 4*, 181-183.

Groessl, E.J., & Cronan, T.A. (2000). A cost analysis of self-management programs for people with chronic illness. *American Journal of Community Psychology, 28*, 455-480.

Gurland, B.J., Wilder, D.E., & Berkman, C. (1988). Depression and disability in the elderly: Reciprocal relations and changes with age. *International Journal of Geriatric Psychiatry, 23*, 163-179.

Guthrie, E. (1996). Emotional disorders in chronic illness: psychotherapeutic interventions. *British Journal of Psychiatry*, 3, 265-273.

Hampson, S.E., Glasgow, R.E., & Zeiss, A.M. (1996). Coping with osteoarthritis by older adults. *Arthritis Care and Research, 2*, 133-141.

Hardwood, R.H., Prince, M.J., Mann, A.H., & Ebrahim, S. (1998). The prevalence of diagnoses, impairments, disabilities, and handicaps in a population of elderly people living in a defined geographical area: the Gospel Oak project. *Age and Ageing, 27*, 707-714.

Härter, M., Reuter, K., Gross-Hardt, K., & Bengel, J. (2001). Screening for anxiety, depressive and somatoform disorders in rehabilitation-validity of HADS and GHQ-12 in patients with musculoskeletal disease. *Disability and rehabilitation, 16*, 737-744.

Harvey, J.H., & Miller, E.D. (2000). *Loss and trauma general and close relationship perspectives.* Philadelphia: Brunner-Routledge Taylor & Francis Group.

Hawker, G.A., Wright, J,G., Coyte, P.C., Williams, J.I., Harvey, B. ,Glazier, R., et al. (2000).

Differences between men and women in the rate of use of hip and knee arthroplasty. *New England Journal of Medicine, 342*,1016-1022

Hawley, D.J., & Wolfe, F. (1988). Anxiety and depression in patients with rheumatoid arthritis: A prospective study of 400 patients. *The Journal of Rheumatology, 1988, 15*, 932-941.

Hawley, D.J., Wolfe, F., Cathey, M.A., & Roberts, F.K. (1991). Marital status in rheumatoid arthritis and other rheumatic disorders: a study of 7,293 patients. *Journal of Rheumatology, 18*, 654-660.

Health Canada (1999). *Canada's seniors. Seniors with chronic health conditions.* Division of Aging and Seniors. Retrieved January 6, 2006 from http://www.hc-sc.gc.ca/seniors-aines/pubs/factoids/1999.

Heckhausen, J., & Brim, O.G. (1997). Perceived problems for self and others: Self-protection by social downgrading throughout adulthood. *Psychology and Aging, 12*, 610-619.

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review, 102*, 284-304.

Heckhausen, J., & Schulz, R. (1998). Developmental regulation in adulthood: Selection and compensation via primary and secondary control. In J. Heckhausen & C.S. Dweck. (Eds). *Motivation and self-regulation across the life span* (pp. 50-77). New York: Cambridge University Press.

Helgeson, V.S. (1992). Moderators of the relation between perceived control and adjustment to chronic illness. *Journal of Personality and Social Psychology, 63*, 656-666.

Henderson, A.S., Korten, A.E., Jacomb, P.A., MacKinnon, A.J., Jorm, A.F., Christensen, H., et al. (1997). The course of depression in the elderly: a longitudinal community-based study

in Australia. *Psychological Medicine, 27*, 119-129.

Hendrie, H.C., Callahan, C.M., Levitt, E.E., & Hui Sui, L. (1995). Prevalence rates of major depressive disorders: the effects of varying the diagnostic criteria in an older primary care population. *American Journal of Geriatric Psychiatry, 3*, 119-131.

Heuts, P.H.T.G., Vlaeyen, J.W.S., Roelofs, J., de Bie, R.A., Aretz, K., van Weel, C., et al. (2004). Pain-related fear and daily functioning in patients with osteoarthritis. *Pain, 110*, 228-235.

Hilton, J.M, Martin, S.E., & Halderman, V.A. (1994). Using psychometric analysis to evaluate the construct validity and reliability of the coping responses indices. *Journal of Family and Economic Issues, 15*, 201-221.

Hirvonen, J., Blom, M, Tuominen, U., Seitsalo, S., Lehto, M. Paavolainen, P., et al. (2006). Health-related quality of life in patients waiting for major joint replacement. A comparison between patients and population controls. *Health and Quality of Life Outcomes, 4*, 1-7.

Hochberg, M. (1984). Osteoarthritis, pathophysiology, clinical features and management. *Hospital Practice*, 41-53.

Hochberg, M.C. (1996). Prognosis of osteoarthritis. *Annals of the Rheumatic Disease, 55*, 685-688.

Hocking, L.B., & Koenisg, H.G. (1995). Anxiety in medically ill older patients: A review and update. *International Journal of Psychiatry in Medicine, 3*, 221-238.

Hoffman, H.E. (1970). Use of avoidance and vigilance by repressors and sensitizers. *Journal of Consulting and clinical Psychology, 34*, 91-96.

Holahan, C.J., Moos, R.H., & Schaefer, J. (1996). Coping, resilience, and growth:

Conceptualizing adaptive functioning. In M. Zeidner & N. Endler (Eds.). *Handbook of coping: Research, theory, and application* (pp. 24-43). New York: Wiley.

Holahan, C.J., Moos, R.H., & Bonin, L.A., (1999). Social context and depression: an integrative stress and coping framework. T. Joiner, J.C. Coyne (Eds). *The interactional nature of depression: Advances in interpersonal approaches. (pp. 39-63).* Washington, DC: American Psychological Association.

Holahan, C.J.; Moos, R.H., Holahan, C.K., & Brennan, P.L. (1997). Social context, coping strategies, and depressive symptoms: An expanded model with cardiac patients. *Journal of Personality & Social Psychology, 4*, 918-928.

Hong Tak, S. (1998). Chronic daily stress, coping strategies and resources, and life satisfaction among older women with osteoarthritis. Dissertation Abstracts International

Hopman-Rock, M., Kraaimaat, F.W., & Bijlsma, J.W.J. (1997). Quality of life in elderly subjects with pain in the hip or knee. *Quality of Life Research, 6*, 67-76.

Hoyl, M.T., Aless, C.A., Harker, J.O., Josephson, KR., Pietruszka, F.M., Koelfgen, M., et al., (1999). Development and testing of a five-item version of the geriatric depression scale. *Journal of American Geriatric Society, 47*, 873-878.

Hussaini, B.A., & Moore, S.T. (1990). Arthritis, disability, depression, and life satisfaction among elderly Black people. *Health and Social Work, 15*, 253-260.

Institut de la statistique du Québec (2001). *Enquête québécoise sur les limitations d'activités 1998.* Ste-Foy: Institut de la statistique du Québec (Collection la santé et le bien-être.

Jordan, M.S., Lumley, M.A., & Leisen, J.C. (1998). The relationships of cognitive coping and pain control beliefs to pain and adjustment among African-American and Caucasian

women with rheumatoid arthritis. *Arthritis Care and Research, 11*, 80-88.

Judd, L.L., Paulus, M.P., Wells, K.B., & Rapaport, M.H. (1996). Socioeconomic burden of subsyndromal depressive symptoms and major depression in a sample of the general population. *American Journal of Psychiatry, 11*, 1411-1417.

Kasper, J.D., & Simonsick, E.M. (1995). Mental health and general well-being. In National Intitute of Health. *The Women's Health and Aging Study: Health and Social Characteristics of Older Women with Disability* (NIH Pub. No. 95-4009). Bethesda, MD: National Institute on Aging.

Katona, C.L.E., Manela, M.V., & Livingston, G.A. (1997). Comorbidity with depression in older people: the Islington Study. Aging and Mental Health, 1, 57-61.

Katona, C., Livingston, G., Manela, M., Leek, C., Mullan, E., Orrell M., et al. (1997). The symptomatology of depression in the elderly. *International Clinical Psychopharmacology*, 12, S19-S23.

Keefe, F.J., & Williams, D.A. (1990). A comparison of coping strategies in chronic pain patients in different age groups. *Journals of Gerontology, 45*, P161-P165.

Keefe, F.J., Brown, G.K., Wallston, K.A., & Cladwell, D.S. (1989). Coping with rheumatoid arthritis pain: Catastrophizing as a maladaptive strategy. *Pain, 37*, 51-56.

Keefe, F.J., Lefebvre, J.C., Egert, J.R., Affleck, G., Sullivan, M.J., & Caldwell, D.S. (2000). The relationship of gender to pain, pain behaviour, and disability in osteoarthritis patients: The role of catastrophizing. *Pain, 87, 325*-334.

Keefe, F.J., Smith, S.J., Buffington, A.L.H., Gibson, J., Studts, J.,L., & Caldwell, D.S. (2002). Recent advances and future directions in the biopsychosocial assessment and treatment of

arthritis. *Journal of Consulting and Clinical Psychology, 70*, 640-655.

Keefe, F.J., Caldwell., D.S., Queen, K., Gil, K.M., Martinez, S., Crisson, J.E., & al. (1987). Osteoarthritic knee pain: A behavioral analysis. *Pain, 28*, 309-321.

Keefe, F.J., Caldwell, D.S., Williams, D.A., Gil, K.M., Mithcell, D., Robertson, C., et al., (1990). Pain coping skills training in the management of osteoarhtritic knee pain – II: Follow-up results. *Behavior Therapy, 21*, 435-447.

Kempen, G.I.J., van Sonderen, E., & Ormel, J. (1999). The impact of psychological attributes on changes in disability among low-functioning older persons. *Journal of Gerontology: Psychological Sciences, 1*, 23-29.

Kennedy, G.L., Kelman, H.R., & Thomas, C. (1990). The emergence of depressive symptoms in late life: The importance of declining health and increasing disability. *Journal of Community Health, 5*, 93-104.

Koenig, H.G., Cohen, H.J., Blazer, D.G., Krishnan K.R., & Sibert, T.E. (1993). Profile of depressive symptoms in younger and older medical inpatients with major depression. *Journal of American Geriatric Society, 41*, 1169-1176.

Kraaij, V., Pruymboom, E., & Garnefski, N. (2002). Cognitive coping and depressive symptoms in the elderly: a longitudinal study. *Aging & Mental Health, 6*, 275-281.

Lachman, M.E., & Weaver, S.L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology, 74*, 763-773.

Lam, C.L.K., Pan, P.C., Chan, A.W.T., Chan, S.Y., & Munro, C. (1995). Can the Hospital Anxiety and Depression (HAD) Scale be used on Chinese elderly in general practice?

Family Practice, 2, 149-154.

Lambert, V.A (1985). Study of factors associated with psychological well-being in rheumatoid arthritic women. *The Journal of Nursing Scholarship, 2*, 50-59.

Lawrence, R.C., Helmick, C.G., Arnett, F.C., Deyo, R.A., Felson, D.T., Giannini, E.H., et al. (1998). Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis & Rheumatism, 41*, 778-99.

Lawton, M.P. (1975). The Philadelphia Geriatric Center Morale Scale: A revision. *Journal of Gerontology, 30*, 85-89.

Lazarus, R.S. (1999). *Stress and emotion: A new synthesis*. New York: Springer Publishing Company.

Lazarus, R.S., & DeLongis, A. (1983). Psychological stress and coping in aging. *American Psychologist, 38*, 245-254.

Lazarus, R.S., & Folkman, S. (1984). *Stress appraisal, and coping*. New York: Springer.

Lazarus, R.S., & Folkman, S. (1991). The concept of coping. In A. Monat & R.S. Lazarus (Eds). *Stress and coping: An anthology* (3rd ed.) (pp. 189-206). New York: Columbia University Press.

Leahy, R.L., & Holland, S.J. (2000). *Treatment plans and interventions for depression and anxiety disorders*. New York: The Guilford Press.

Léger, E., Ladouceur, R., & Freeston, M.H. (2002). Anxiété et limitation physique: une relation complexe. *L'Encéphale, 28*, 205-209.

Levy, B.R., Conway, K., Brommelhoff, J., & Merikengas, K. (2003). Intergenerational differences in reporting of elders' anxiety. *Journal of Mental Health and Aging, 9*, 233-241.

Liang, M.H., Larson, M., Thompson, M., Eaton, H., McNamara, E., Katz, R., et al. (1984). Costs and outcomes in rheumatoid arthritis and osteoarthritis. *Arthritis and Rheumatism, 5*, 522-529.

Lin, E.H.B., Katon, W., Von Korff, M., Tang, L., Williams, J.W.Jr., Kroenke, K., et al. (2006). Effect of improving depression care on pain and functional outcomes among older adults with arthritis. *Journal of American Medical Association, 290*, 2428-2803.

Lindö, G., & Nordholm, L. (1999). Adaptation strategies, well-being, and activities of daily living, among people with low vision. *Journal of Visual Impairment & Blindness, 93* 434-446.

Ling, S.M., Fried, L.P., Garrett, E.S., Ming-Yu, F., Rantanen, T., & Bathon, J.M. (2003). Knee osteoarthritis compromises early mobility function: The Women's Health and Aging Study II. *The Journal of Rheumatology, 30*, 114-120.

Lipowski, Z.J. (1979). Physical illness and psychiatric disorder: A neglected relationship. *Psychiatria Fennica suppl*, 32-57.

Lisspers, J., Nygren A., & Soderman E. (1997). Hospital Anxiety and Depression Scale (HAD): some psychometric data for a Swedish sample. *Acta Psychiatrica Scandinavica. 96*, 281-286.

Little, H. (1982). Coping with rheumatoid arthritis. *Canadian Medical Association Journal, 127*, 190-191.

Long, B.C., & Sangster, J.I. (1993). Dispositional optimism/pessimism and coping strategies: Predictors of psychosocial adjustment of rheumatoid and osteoarthritis patients. *Journal of Applied Social Psychology, 13*, 1069-1091.

McFarlane, A.C., & Brooks, P.M. (1997). The assessment of disability and handicap in musculoskeletal disease. *The Journal of Rheumatology, 24*, 985-989.

McKeag, D.B. (1992). The relationship of osteoarthritis and exercise. *Clinical Sports Medicine, 11*, 471-487.

McWilliams, L.A., Goodwin, R.D., & Cox, B.J. (2004). Depression and anxiety associated with three pain conditions: results from a nationally representative sample. *Pain, 111*, 77-83.

Mann, H.M. (2001). The relationship of physical illness, functional impairment, social support and depressive symptoms in retirement community-dwelling elderly. *Dissertation Abstracts International, Section B: The Sciences and Engineering, 62*(5-B). UMI no. 3015588.

Maser, J.D., & Cloninger, C.R. (Eds.). (1990). *Comorbidity of mood and anxiety disorders.* Washington, DC: American Psychiatric Association.

Mason, J.H., Anderson, J.J., & Meenan, R.F. (1989). Applicability of a health status model to osteoarthritis. *Arthritis Care and Research, 2*, 89-93.

Mattlin, J.A., Wethington, E., & Kessler, R.C. (1990). Situational determinants of coping and coping effectiveness. *Journal of Health and Social Behavior, 31*, 103-122.

Meenan, R.F. (1982). The AIMS approach to health status measurement: Conceptual background and measurement properties. *Journal of Rheumatology, 5*, 785-788.

Meenan, R.F., Gertman, P.M., & Mason, J.H. (1980). Measuring health status in arthritis. The Arthritis Impact Measurement Scales. *Arthritis and Rheumatism, 2*, 146-152.

Meenan, R.F., Gertman, P.M., Mason, J.H., & Dunaif, R. (1982). The arthritis impact measurement scales. Further investigations of a health status measure. *Arthritis &*

Rheumatism, 25, 1048-1053.

Meenan, R.F., Mason, J.H., Anderson, J.J., Guccione, A.A., & Kazis, L.E. (1992). AIMS2. The content and properties of a revised and expanded Arthritis Impact Measurement Scales Health Status Questionnaire. *Arthritis & Rheumatism, 35*, 1-10.

Melding, P.S. (1995). How do older people respond to chronic pain? A review of coping with pain and illness in elders. *Pain Reviews, 2*, 65-75.

Memel, S., Kirwan, J.R., Sharp, D.J. ,& Hehir, M. (2000). General practitioners miss disability and anxiety as well as depression in their patients with osteoarthritis. *British Journal of General Practice, 50*, 645-648.

Minugh, N.S. (1982). A brief survey of osteoarthritis outside of modern human populations. *Journal of American Podiatry Association, 72*, 217-221.

Mitrushina, M., & Satz, P. (1991). Reliability and validity of the Mini-Mental State Exam in neurologically intact elderly. *Journal of Clinical Psychology, 47*, 537-543.

Morley, S., Eccleston, C., & Williams (1999). Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache. *Pain, 80*, 1-13.

Moore, E.G., Rosenberg, M.W., & Fitzgibbon, S.H. (1999). Activity limitation and chronic conditions in Canada's elderly, 1986-2011. *Disability and Rehabilitation, 5/6*, 196-210.

Moorey, S., Greer, S., Watson, M., Gorman, C., Rowden, L., Tunmore, R., et al., (1991). The facture structure and factor stability of the Hospital Anxiety and Depression Scale in patients with cancer. *British Journal of Psychiatry, 158*, 255-259.

Moos, R.H., & Schaefer, J.A. (1993). Coping resources and processes: Current concepts and

measures. In L. Goldberger & S. Breznitz (Eds.) *Handbook of stress: Theoretical and clinical aspects* (2nd ed.) (pp. 234-257). New York: Free Press.

Moskowitz, J.T., Folkman, S., Collette, L., & Vittinghoff, E. (1996). Coping and mood during AIDS-related caregiving and bereavement. *Annals of Behavioral Medicine, 19*, 49-59.

Mulsant, B.H., & Ganguli, M. (1999). Epidemiology and diagnosis of depression in late life. *Journal of Clinical Psychiatry, suppl. 20*, 9-15.

Murphy, H., Dickens, C., Creed, F., & Bernstein, R. (1999). Depression, illness perception and coping in rheumatoid arthritis. *Journal of Psychosomatic Research, 2*, 155-164.

National Institute of Health (1994). *Consensus Development Conference on total hip replacement*. Bethesda, Md: National Institutes of Health, 1-31.

Newman, S.P. (1997). Psychosocial measures in musculoskeletal trials. *The Journal of Rheumatology, 24*, 979-984.

Newman, J.P., & Engel, R.J. (1991). Age differences in depressive experiences. *Journal of Gerontology, 46*, 224-235.

Newsom, J.T., Knapp, J.E., & Schulz, R. (1996). Longitudinal analysis of specific domains of internal control and depressive symptoms in patients with recurrent cancer. *Health Psychology, 15*, 323-331.

Nir, Z., & Galinsky, D. (2000). The biopsychosocial adjustment of disabled elderly: A 1-year follow-up. *Rehabilitation Nursing, 1*, 13-22.

Nour, K., Laforest, S., Gignac, M., & Gauvin, L. (2005). Appreciating the predicament of housebound older adults with arthritis: Portrait of a population. *Canadian Journal on Aging, 24*, 57-70.

Öberg, U., & Öberg, T. (1996). Worse functional status among old people when admitted for arthroplasty. An evaluation with a new assessment system. *Scandinavian, Journal of Caring Sciences, 10,* 96-102.

Oen, K, Postl, B, Chalmers, I.M., Ling, N., Schroeder, M.L., Baragar, F.D., Martin, L., et al., (1986). Rheumatic diseases in an Inuit population. *Arthritis & Rheumatism, 29*, 65-74.

Ormel, J., Rijsdijk, V., Sullivan, M., van Sonderen, E., & Kempen, G.I.J.M. (2002). Temporal and reciprocal relationship between IADL/ADL disability and depressive symptoms in late life. *Journal of Gerontology: Psychological Sciences, 57B, 4*, 338-347.

Pangman, V.C., Sloan, J., & Guse, L. (2000). An examination of psychometric properties for the Mini-Mental State Examination and the Standardized Mini-Mental State Examination: implication for clinical practice. *Applied Nursing Research, 13*, 209-213.

Parker, J. McRae, C., Smarr, K., Beck, N., Frank, R., Anderson, S., et al. (1988). Coping strategies in rheumatoid arthritis. *The Journal of Rheumatology, 9*, 1376-1383.

Parker, J.C., Smarr, K.L., Slaughter, J.R., Johnston, S.K., Priesmeyer, M.L., Hanson, K.D., et al. (2003). Management of depression in rheumatoid arthritis: a combined pharmacologic and cognitive-behavioral approach. *Arthritis & Rheumatism, 49*, 766-77.

Parmelee, P.A., Thuras, P.D., Katz, J.R., & Lawton, M.P. (1995). Validation of the cumulative illness rating scale in a geriatric residential population. *Journal of the American Geriatrics Society, 43*, 130-137.

Peacock, E.J., & Wong, P.P. (1990). The Stress Appraisal Measure (SAM): A multidimensional approach to cognitive appraisal. *Stress Medicine, 6*, 227-236.

Pearlin, L.I., & Schooler C. (1978). The structure of coping. *Journal of Health and Social*

Behavior, 1, 2-21.

Penninx, B.W., Guralnick, J.M., Ferrucci, L., Simonsick, E.M., Dee, D.J.H., & Wallace, R.C. (1998). Depressive symptoms and physical decline in community-dwelling older persons. *Journal of the American Medical Association, 279*, 1720-1726.

Penninx, B.W., Beekman, A.T., Ormel, J., Kriegsman, D.M., Boeke, A.J., van Eijk, J.M., et al. (1996). Psychological status among elderly people with chromic diseases: Does type of disease play a part? *Journal of Psychosomatic Research, 5,* 521-534.

Peters, M.L., Vlaeyen, J.W.S., & Weber, W.E.J. (2005). The joint contribution of physical pathology, pain-related fear and catastrophizing to chronic back pain disability. *Pain, 113*, 45-50.

Pincus, T., & Callahan, L.F. (1985). Formal education as a marker for increased mortality and morbidity in rheumatoid arthritis. *Journal of Chronic Diseases, 38*, 973-984.

Plutchik, R., Botsis, A.J., Weiner, M.B., & Kennedy, G.J. (1996). Clinical measurement of suicidality and coping in late life. A theory of countervailing forces. In G.J. Kennedy (Ed.). *Suicide and Depression in Late Life. Critical Issues in Treatment, Research, and Public Policy* (pp. 83-102). New York: John Wiley & Sons.

Pouchot, J., Guillemin, F, Coste, J., Brégeon, C, Sany, J., & the "Quality of Life in Rheumatology" Task Force (1996). Validation of the French version of the Arthritis Impact Measurement Scales 2 and comparison with the French version of the Nottingham Health Profile. *Revue du Rhumatisme, 6*, 389-404.

Prohaska, T., Mermelstein, R., Miller, B., & Jack, S. (1993). Functional status and living arrangements. In J.F. Van Norstrand, S.E. Furner & R. Suzman (Eds.). *Health data on*

older Amercians: United States 1992 (pp. 23-41). Washington DC: U.S. Government Printing Office.

Regan, C.A. (1990). Appraisal and coping in older persons with osteoarthritis. *Dissertation Abstracts International, 51* (5-A), UMI No. 9017917.

Reich JW., Zautra A.J., & Guarnaccia, CA. (1989). Effects of disability and bereavement on the mental health and recovery of older adults. *Psychology & Aging., 1*,:57-65.

Rejeski, W.J., Ettinger, W.H., Shumaker, S., James, P., Burns, R., & Elam, J.T. (1995). Assessing performance-related disability in participants with knee osteoarthritis. *Osteoarthritis and Cartilage, 3*, 157-167.

Revenson, T.A., & Felton, B.J. (1989). Disability and coping as predictors of psychological adjustment to rheumatoid arthritis. *Journal of Consulting and Clinical Psychology, 3*, 344-348.

Rodger, W., & Miller, B. (1997). A comparative analysis of ADL questions in surveys of older people. *The Journal of Gerontology, 52B*, 21-36.

Roemer, L. (2001). Measures for anxiety and related constructs. In M.M. Antony & S.M. Orsillo (Eds). *Practitioner's guide to empirically based measures of anxiety. AABT clinical assessment series* (pp. 49-83). New York: Academic/Plenum Publisher.

Roesch, S.C., & Weiner, M. (2001). A meta-analytic review of coping with illness. Do causal attributions matter? *Journal of Psychosomatic Research, 50*, 205-219.

Roskies, E., & Lazarus, R.S. (1988). Coping theory and practice: Current status and concerns. In P.I. Ahmed et al., (Eds). *Coping with arthritis* (19-52). Springfield: Charles C Thomas, Publisher.

Ross, C.E., & Mirowsky, J. (1989). Explaining the social patterns of depression: Control and problem-solving-or support and talking? *Journal of Health and Social Behavior, 30*, 206-219.

Rossignol, M., Leclerc, A., Hilliquin, P., Allaert, F.A., Rozenberg, S., Valat, J.P., et al. (2003). Primary osteoarthritis and occupations: A national cross sectional survey of 10 412 symptomatic patients. *Occupational & Environmental Medicine, 60*, 882-886.

Rossman, I. (1986). *Clinical Geriatrics.* Philadelphia: Lippincott.

Rottensten, K. (1996). Monograph series on aging-related diseases: IX. Osteoarthritis. *Chronic Diseases in Canada, 3 / 4*, 92-107.

Rovner, B.W., Zisselman, P.M., & Shmuely-Dulitzki, Y. (1996). Depression and disability in older people with impaired vision: a follow-up study. *Journal of the American Geriatrics Society, 2*, 181-184.

Savard, J., Laberge, B., Gauthier, J.G., Ivers, H., & Bergeron, M.G. (1998). Evaluating anxiety and depression in HIV-infected patients. *Journal of Personality Assessment, 3*, 349-367.

Savelkoul, M., deWitte, L., & Post, M. (2003). Stimulating active coping in patients with rheumatic diseases: A systematic review of controlled group intervention studies. *Patient Education and Counseling, 50*, 133-143.

Savoie, J. (1999). Contextual and subjective indices of coping strategies in breast cancer screening: A longitudinal investigation. *Dissertation Abstracts International, Section B: The Sciences and Engineering, 61(2-B).* UMI No. 95016259.

Schanowitz, J.Y. (2004). Meaning-based and active coping as predictors of positive psychosocial functioning in older adults. *Dissertation Abstracts International: Section B: The Sciences*

and Engineering, 64(10-B), UMI No. 3108276.

Scharloo, M., Kaptein, A.A., Weinman, J.A., Hazes, J.M.W., Breedveld, F.C., & Rooijmans, J.G.M. (1999). Predicting functional status in patients with rheumatoid arthritis. *The Journal of Rheumatology, 8*, 1686-1693.

Schaub, R.T., & Linden, M. (2000). Anxiety and anxiety disorders in the old and very old: Results from the Berlin Aging Study (BASE). *Comprehensive Psychiatry, 2 suppl.1*, 48-54.

Scheier, M.F., Carver, C.S., & Bridges, M.W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A revaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*, 1063-1078.

Schiaffino, K.M., & Revenson, T.A. (1992). The role of perceived self-efficacy, perceived control, and causal attributions in adaptation to rheumatoid arthritis: Distinguishing mediator from moderator effects. *Personality and Social Psychology Bulletin, 18*, 709-718.

Schnitkker, J. (2005). Chronic illness and depressive symptoms in late life. *Social Science & Medicine, 60*, 13-23.

Schoenfeld-Smith, K., Petroski, G.F., Hewett, J.E., Johnson, J.C., Wright, G.E., Smarr, K.L., & al., (1996). A biopsychosocial model of disability in rheumatoid arthritis. *Arthritis Care & Research, 9*, 368-375.

Schulberg, H.C., Mulsant, B.H., Schulz, R., Rollman, B.L., Houck, P.R., & Reynolds, C.F. 3rd. (1998). Characteristics and course of major depression in older primary care patients. *International Journal of Psychiatry in Medicine, 28*, 421-436.

Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social

support, perceived control, and self-blame. *Journal of Personality and Social Psychology, 5*, 1173-1190.

Schulz, R., & Heckhausen, J. (1999). Aging, culture and control: Setting a new research agenda. *Journal of Gerontology: Psychological Sciences, 3*, 139-145.

Schulz R., Heckhausen, J., & O'Brien, A.T. (1994). Control and the disablement process in the elderly. *Journal of Social Behavior and Personality, 5*, 130-152.

Schulz, R., Heckhausen, J., & O'Brien, A. (2000). Negative affect and the disablement process in late life: A life-span control theory approach. In S.B. Manuck, R. Jennings, al. *Behavior, health, and aging* (pp. 119-133). New Jersey: Lawrence Erlbaum Associates, Inc., Publishers.

Schulz, R., O'Brien, A.T., & Tompkins, C.A (1994). The measurement of affect in the elderly. In M.P. Lawton, A.J. Teresi et al., (Eds), et al. *Annual review of gerontology and geriatrics: Focus on assessment techniques* (pp. 210-233). New York: Springer Publishing Company.

Schulz, R., O'Brien, A.T., Bookwala, J., & Fleissner, K. (1995). Psychiatric and physical morbidity effects of Alzheimer's disease caregiving: Prevalence, correlates, and causes. *Gerontologist, 35*, 771-791.

Schulz, R., & Williamson, G.M. (1991). A 2-year of longitudinal study of depressive among Alzheimer's caregivers. *Psychology and Aging, 6*, 569-578.

Schumacher, H.R. (1988). *Primer on the rheumatic disease* (9th Ed.). Atlanta: Arthritis Foundation.

Segrist, K.A. (1998). Support groups for older women: Impact on affect, social support and sense of control. *Dissertation Abstracts International, Section A: Humanities and Social*

Sciences, 59(6-A). UMI No. 9838534.

Seligman, M.E.P. (1975). *Helplessness: On depression, development and death.* San Francisco: Freeman.

Sheikh, J.I. (1992). Anxiety and its disorders in old age. In J.E. Birren, R.B. Sloane, and G. Cohen (Eds.) *Handbook of Mental Health and Aging* (2nd ed.) (pp. 409-432). San Diego: Academic Press.

Shupe, D.R. (1985). Perceived control, helplessness, and choice: Their relationship to health and aging. In J.E. Birre, & J. Livingston (Eds.). *Cognition, stress and aging* (pp. 174-197). New Jersey: Englewood Cliffs: Prentice Hall.

Singer, M.A., Hopman, W.M., & MacKenzie, T.A. (1999). Physical functioning and mental health in patients with chronic medical conditions. *Quality of Life Research, 8*, 687-691.

Skevington, S.M., & White A. (1998). Is laughter the best medicine? *Psychology and Health, 1*, 157-169.

Skinner, E.A. (1996). Personality processes and individual differences. A guide to constructs of control. *Journal of Personality and Social Psychology, 3*, 549-570.

Slemenda, C.W. (1992). The epidemiology of osteoarthritis of the knee. *Current Opinion in Rheumatology, 4*, 546-551.

Smith, B.W. (2002). Vulnerability and resilience as predictors of pain and affect in women with arthritis. *Dissertation Abstracts International, Section B: The Sciences and Engineering, 63*(3-B). UMI No. 3045667

Smith, C., & Wallston, K.A. (1992). Adaptation in patients with chronic rheumatoid arthritis: Application of a general model. *Health Psychology, 3*, 151-162.

Smith, C.A., Wallston, K.A., & Dwyer, K.A. (2003). Coping and adjustment to rheumatoid arthritis. In J.Suls & K.A. Wallston (Eds.). *Social Psychological Foundations of Health and Illness* (pp. 458-474). Australia: Blackwell Publishing Ltd.

Smith, T.W., Peck, J.R., & Ward, J.R. (1990). Helplessness and depression in rheumatoid arthritis. *Health Psychology, 9*, 377-389.

Smith, T.W., Christensen, A.J., Peck, J.R., & Ward, J.R. (1994). Cognitive distortion, helplessness, and depressed mood in rheumatoid arthritis: A four-year longitudinal analysis. *Health Psychology, 13*, 213-217.

Smith, T.W., Peck, J.R., Milano, R.A., & Ward, J.R. (1988). Cognitive distortion in rheumatoid arthritis: Relation to depression and disability. *Journal of Consulting and Clinical Psychology, 56*, 412-416.

Snowdon, J. (1990). The prevalence of depression in old age. *International Journal of Geriatric Psychiatry, 5*, 141-144.

Somerfield, M.R., Curbow, B. Wingard, J.R., Baker, F., & Fogarty, L.A. (1996). Coping with the physical and psychosocial sequelae of bone marrow transplantation among long-term survivors. *Journal of Behavioral Medicine, 19*, 163-183.

Spector, W.D. (1996). Functional disability scales. In B. Spiker (Ed.), *Quality of life and pharmacoeconomics in clinical trials (pp. 133-143).* Philadelphia: Lippincott-Raven Publishers.

Spinhoven P., Ormel, J., Sloekers, P.P., Kempen, G.I., Speckens, A.E., & van Hemert, A.A. (1997). A validation study of the Hospital Anxiety and Depression Scale (HADS) in different groups of Dutch subjects. *Psychological Medicine, 2*, 363-370.

Steffens, D.C., Hays, J.C., & Krishnan, K.R.R. (1999). Disability in geriatric depression. *American Journal of Geriatric Psychiatry, 7*, 34-40.

Steinberg, J.R. (1994). Anxiety in elderly patients. A comparison of azapirones and benzodiazepines. *Drugs & Aging, 5*, 335-345.

Stewart, M.W., & Knight, R.G. (1991). Coping strategies and affect in rheumatoid and psoriatic arthritis. *Arthritis Care and Research, 4*, 116-122.

Swinkels-Meewisse, I.E.J., Roelofs, J., Verbeek, A.L.M., Oostendorp, R.A.B., & Vlaeyen, J.W.S. (2003). Fear of movement/(re)injury, disability and participation in acute low back pain. *Pain, 105*, 371-379.

Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate statistics* (4th Ed). Boston: Allyn & Bacon.

Taylor, S.E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist, 38*, 1161-1173.

Terry, D.J. (1994). Determinants of coping: The role of stable and situational factors. *Journal of Personality and Social Psychology, 66*, 895-910.

Thompson, S., & Kyle, D.J. (2000). The role of perceived control in coping with losses associated with chronic illness. In J.H. Harvey & E.D. Miller (Eds.) *Loss and Trauma* (pp. 131-145). Philadelphia: Brunner-Routledge Taylor & Francis Group.

Thompson, S.C., & Spacapan, S. (1991). Perceptions of control in vulnerable populations. *Journal of Social Issues, 1*, 1-21.

Thompson, S.C., Sobollew-Shubin, A., Galbraith, M.E., Schwankovsky, L., & Cruzen, D. (1993). Maintaining perceptions of control: Finding perceived control in low-control

circumstances. *Journal of Personality and Social Psychology, 64*, 293-304.

Tombaugh, T.N., & McIntyre, N.J. (1992). The Mini-Mental State Examination: a comprehensive review. *Journal of the American Geriatrics Society, 40*, 922-935.

Turner, R.J., & Beiser, M. (1990). Major depression and depressive symptomatology among the physically disabled. Assessing the Role of Chronic Stress. *The Journal of Nervous and Mental Disease, 6*, 343-350.

Turner, R.J., & Noh, S. (1988). Physical disability and depression. *Journal of Health and Social Behavior, 29*, 23-37.

U.S. Department of Commerce (1986). *Bureau of Census: statistical abstract of the U.S.* Washington, D.C. Government Printing Office.

van Baar, M.E., Dekker, J., Albert, J., Lemmens, M., Oostendorp, R.A.B., & Bijlsma, J.W.J. (1998). Pain and disability in patients with osteoarthritis of hip or knee: The relationship with articular, kinesiological, and psychological characteristics. *Journal of Rheumatology, 25*, 125-133.

van Lankveld, W., van't Pad Bosch, P., van de Putte, L., Naring G., & van der Staak C. (1994). Disease-specific stressors in rheumatoid arthritis: Coping and well-being. *British Journal of Rheumatology, 33*, 1067-1073.

Verbrugge, L.M., & Jette, A.M. (1994). The disablement process. *Social Science and Medicine, 38*, 1-14.

Verbrugge, L.M., Lepkowski, J.M., & Konkol, L.L. (1991). Levels of disability among U.S. adults with arthritis. *Journal of Gerontology: Social Sciences, 46,* S71-83.

Vine, R.G., & Steingart, A.B. (1994). Personality disorder in the elderly depressed. *Canadian*

Journal of Psychiatry, 7, 392-398.

Viney, L.L., & Westbrooke, M.T. (1981). Psychological reactions to chronic illness-related disability as a function of its severity and type. *Journal of Psychosomatic Research, 25*, 513-523.

Wattis, J.P., Davies, K.N., Burn, W.K., McKenzie, F.R., & Brothwell, J.A. (1994). Correlation between Hospital Anxiety Depression (HAD) Scale and other measures of anxiety and depression in geriatric inpatients. *International Journal of Geriatric Psychiatry, 1*, 61-63.

Weaver, F., Hynes, D., Hopkinson, W., Wixson, R., Khuri, S., Daley, J., et al., (2003). Preoperative risks and outcomes of hip and knee arthroplasty in the Veterans Health Administration. *Journal of Arthroplasty, 18*, 693-708.

Weiner, C.L. (1975). The burden of rheumatoid arthritis: Tolerating the uncertainty. *Social Science and Medicine, 9*, 87-104.

Wells, K.B., Golding, J.M., & Burnam, M.A. (1988). Psychiatric disorder in a sample of the general population with and without chronic medical conditions. *American Journal Psychiatry, 49*, 808-812.

Wells, K.B., Stewart, A., Hays, R.D., Burnam, MA,. Rogers, W., Daniels, M., et al. (1989). The functioning and well-being of depressed patients: results of the Medical Outcomes Study. *Journal of American Medical Association, 262*, 914-919

Wigley, F.M. (1984). Osteoarthritis: Practical management in older patients. *Geriatrics, 39*, 101-120.

Williams, J.I., Llewellyn, T.H., Arshinoff, R., Young, N., & Naylor, C.D. (1997). The burden of waiting for hip and knee replacements in Ontario. Ontario Hip and Knee Replacement

Project Team. *Journal of Evaluation in Clinical Practice, 3*, 59-68

Williamson, G.M. (2000a). Pain, function disability, and depressed affect. In G.M. Williamson, D.R. Shaffer & P.A. Parmelee (Eds.). *Physical Illness and Depression in Older Adults. A Handbook of Theory, Research and Practice* (pp.51-64). New York: Kluwer Academic/ Plenum Publishers.

Williamson, G.M. (2000b). Extending the activity restriction model of depressed affect: evidence from a sample of breast cancer patients. *Health Psychology, 4*, 39-47.

Williamson, G.M., & Shaffer (2000). The activity restriction model of depressed affect. Antecedents and consequences of restricted normal activities. In G.M. Williamson, D.R. Shaffer & P.A. Parmelee (Eds.). *Physical Illness and Depression in Older Adults. A Handbook of Theory, Research and Practice* (pp.173-200). New York: Kluwer Academic/ Plenum Publishers.

Williamson, G.M., & Schulz, R. (1992a). Pain, activity restriction, and symptoms of depression among community-residing elderly. *Journal of Gerontology, 47*, 367-372.

Williamson, G.M., & Schulz, R. (1992b). Physical illness and symptoms of depression among elderly outpatients. *Psychology and Aging, 7*, 343-351.

Williamson, G.M., & Schulz, R. (1995). Symptoms of depression in elderly persons: Beyond the effects of physical illness and disability. In B.J, Vellas & J.L. Albarede (Eds.). *Mood and cognitive disorder. Facts and research in gerontology* (pp.9-19). New York: Springer Publishing.

Williamson, G.M., Shaffer, D.R., & Parmelee, P.A. (2000). Physical illness and *depression in older adults. A handbook of theory, research and practice.* New York: Kluwer Academic/

Plenum Publishers.

Williamson, G.M., Schulz, R., Bridges, M., & Behan, A. (1994). Social and psychological factors in adjustment to limb amputation. *Journal of Social Behavior and Personality, 9*, 249-268.

Woo, J., Lau, E., Lee, P., Kwok, T., Lau, W.C., Chan, C., et al. (2004). Impact of osteoarthritis on quality of life in a Hong Kong Chinese population. *Journal of Rheumatology, 31*, 2433-2438.

World Health Organisation (1980). *International classification of impairments, disabilities and handicaps*. Geneva: World Health Organisation.

World Health Organisation (2001). *International classification of impairments, disabilities and handicaps*. Geneva: World Health Organisation.

Wykle, M.L,. & Mion, L.C. (1990). Mental health issues in the disabled elderly. In S.J. Brody & L.G. Pawlson (Eds). *Aging and Rehabilitation II. The State of the Practice* (pp. 233-254). New York: Springer Publishing Company.

van Baar, M.E., Dekker, J., Lemmens, J.A., & Oostendorp, R.A. (1998). Pain and disability in patients with osteoarthritis of hip or knee: The relationship with articular, knesiologica, and psychological characteristics. *Journal of Rheumatology, 25*, 125-133.

van der Heide, A., Jacobs, W.G., van Albada-Kuipers, G.A., Kraaimatt, F.W., Greenen, R., & Bijlsman, J.W.J. (1994). Physical disability and psychological well being in recent onset rheumatoid arthritis. *The Journal of Rheumatology, 21*, 28-32.

Yelin, E. (1992). Arthritis: The cumulative impact of a common chronic condition. *Arthritis and Rheumatism, 35*, 489-497.

Yelin, E., Lubeck, D., Holman, H., & Epstein, W. (1987). The impact of rheumatoid arthritis and osteoarthritis: The activities of patients with rheumatoid arthritis and osteoarthritis compared to controls. *The Journal of Rheumatology, 4*, 710-717.

Zarit; S.H., Femia, E.E., Gatz, M., & Johansson, B. (1999). Prevalence, incidence, and correlates of depression in the oldest old: the OCTO study. *Aging & Mental Health, 2*, 119-128.

Zautra, A.J., & Manne, S.L. (1992). Coping with rheumatoid arthritis: A review of a decade of research. *Annals of Behavioral Medicine, 1*, 31-39.

Zautra, A.J., & Wrabetz, A.B. (1991). Coping success and its relationship to psychological distress for older adults. *Journal of Personality and Social Psychology, 61*, 801-810.

Zautra, A.J., Maxwell, B.M., & Reich, J.W. (1989). Relationship among physical impairment, distress, and well-being in older adults. *Journal of Behavioral Medicine, 6*, 543-557.

Zea, M.C., Reisen, C.A., & Tyler, F.B. (1996). Reliability, ethnic comparability and validity evidence for a condensed measure of proactive coping: The BAPC-C. *Educational and Psychological Measurement, 56,* 330-343.

Zigman, A.S., & Snaith, R.P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica, 67*, 361-370.

Zwemer, W.A., & Deffenbacher, J.L. (1984) Irrational beliefs, anger, and anxiety. *Journal of Counseling Psychology, 31*, 391-393.

Appendix A

Table 1

Appraisal and Coping strategies: their impact on psychological outcome of older adults suffering from arthritis

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Barlow, Turner & Wright (1998)	-Great Britain -community (medical clinics, rheumatology department and local media) -RA and OA	N=117 (58 RA; 45 OA) -81% W -mean age in RA groupof 57 years -mean age in OA group of 64 years	-single group pre-test/post-test (baseline and 4 months follow-up) -psycho-educational interventions (6 weekly 2 hrs. sessions) including: information on arthritis, self-management, pain management, communication with doctor and exercise	-perceived control) -pain (self-report) -fatigue (self-report) -acceptance of illness (self-report) -anxious symptoms (self-report) considered as self-efficacy for pain and other arthritis symptoms (self-report) -coping strategies (self-report) -physical functioning (self-report -depressive symptoms (self-report) -positive and negative affect (self-report)	-after intervention, significant increase in self-efficacy with pain and other arthritis symptoms as well as a significant reduction of anxiety and pain -significant increase in cognitive symptoms management, physical exercise, communication with doctor and relaxation exercise -positive and negative affect stable over time
Brenner, Melamed & Panush (1994)	-USA -community -RA	-N = 66 (83% W) Time 1; N=41 at Time 2 -mean age of 58 years	-correlationnal -longitudinal (two time measure)	-functional disability (self-report) -optimism (self-report) -perceived social support (self-report) -arthritis helplessness (self-report) -coping strategies (self-	-psychological adjustment at Time 1 was associated with less disability, less helplessness, more optimism and more perceived social support -psychological adjustment at Time 2 was related to less disability, less helplessness, greater optimism, more perceived social support

Table 1 (continued)

Study	Country and . Context of Study	Sample (N, Age, Sex)	Design	Measures .	Results .
				-psychological adjustment including: daily social interaction (self-report); life satisfaction (self-report); positive and negative affect (self-report); depressive symptoms (self-report)	-optimism was the only predictor of increase in psychological adjustment over time regardless of level of disability -problem solving and wishful thinking both predicted positive and negative psychological adjustment, respectively, at Time 1 but only wishful thinking predicted psychological adjustment at Time 2 where more wishful thinking strategies were associated with lesser psychological adjustment
Burckhardt & Bjelle (1996)	-Sweden -community -RA, SLE, FM	-N=150 W (48 FM, 22 RA, 23 SLE) -mean age for each group: 45.7 years - FM, 45.4 years - RA, 42.5 years - SLE	-group comparison -correlational -cross-sectional	-impact of arthritis (self-report) -severity of disease (reported by clinician) -perception of disease impact (self-report) -2 measures of pain (self-report) -depression (self-report) -anxiety (self-report) -quality of life (self-report) -coping strategies (self-report)	-helplessness factor (low personal control) and internality factor (high personal control) emerged from exploratory factor analysis -all groups perceived low control over pain, low control over their condition even if they were to do the right thing to manage their illness -all groups mostly disagreed with the belief that they could only do what their doctor told them to do to manage their condition -inflammation of RA existed independently of a sense of control -no specificity of coping strategies used -RA and SLE patients perceived higher

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
					control over their symptoms -higher perception of control over arthritis was positively associated with the ability to control and decrease arthritic pain as well as greater quality of life -depressive symptoms and anxious symptoms were negatively related to self perceived control
Chui, Lau & Yau (2004)	-Hong Kong -rehabilitation service organization -RA	-N=70 -84.3% W -2/3 between 35-54 years old	-single group pre-post design wit 4-time measure over 7 months -self-management program enhancing perception of control over symptoms, health behaviors and health status	-self-management behaviour (self-report) -arthritis self-efficacy scale for pain and other symptoms (self-report) -arthritis helplessness (self-report) -depressive symptoms (self-report) -anxious symptoms (self-report) -pain and fatigue (self-report) -health care utilization (number of visits to GP in last 2 months)	-significant reduction in helplessness after intervention and at 6 months follow-up -significant improvements on self-management behaviours (e.g. exercise, cognitive symptoms management, communication with physician) upon completion of program and at follow-up -significant reduction of pain, fatigue, depressive and anxious symptoms both after Rx and at 6 months follow-up -patients with less than 1 year RA duration were significantly better than those with more than 3 years of RA duration in terms of self-efficacy, self-management behaviours on exercise and cognitive symptoms management, depressive and anxious symptoms, helplessness and pain

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Elkis-Abuhoff (2002)	-USA -community chiropractic clinics and arthritis support groups -OA	-N=32 (25W; 7M) -mean age of 67 years	-correlational -cross-sectional	-coping strategies (self-report) -depressive symptoms (self-report) -health locus of control (self-report) -pain (self-report) -reactions of significant others to communication of pain (self-report) -participation in daily activities (self-report)	-no significant differences in average scores on locus of control, coping strategies and depressive symptoms -significant negative association between perceived ability to cope with stress and experience of pain -perceived ability to cope with stress was positively related to participation in daily activities -health locus control and ability to cope did not significantly predict adjustment to pain -ability to cope predicted participation in daily activity

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Gignac, Cott & Badley (2000)	-city and rural communities in Ontario -community -OA and OP	-N=286 (85.7% W) -mean age of 68.3 years	-correlational -cross-sectional	-questions related to impairment (interview) -health assessment questionnaire (interview) -functional assessment (interview) -behavioral efforts to manage functional disability (interview) -impact on independence and feeling of dependence (interview) -helplessness (self-report) -coping efficacy (self-report) -emotional reactivity (self-report)	-sense of helplessness associated with selection strategies applied to personal care, community mobility and household activities -optimizing processes used for personal care and in-home mobility associated with helplessness -compensation with personal care, in-home and community mobility, as well as with household activities related to helplessness -emotional reactivity associated with: a) selection strategies in domains of personal care, in-home and community mobility, and household activities; b) optimization with in-home mobility; c) compensation strategies in domains of personal care, in-home and community mobility, and household activities -receiving help for personal care, in-home and community mobility associated with helplessness and emotional reactivity

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Giorgino, Blalock, De Vellis, Keefe & Jordan (1994)	-North Carolina (USA) -university-based tertiary care clinics -RA	-N=235 (78.2% W) -mean age of 52.1 years	-correlational -cross-sectional	-perceived ability to perform a certain activity (self-report) -satisfaction with the ability to perform a certain activity (self-report) -perceived importance of the ability to perform a specific activity (self-report) -satisfaction with ability -perceived control (self-report) -problem solving and escape/avoidance (self-report) -social comparisons (self-report) -temporal comparisons (prior times in life where they experienced difficulties) (self-report) -functional status/arthritis disability (self-report) -2 measures of pain (self-report) -disease activity (self-report)	-participants perceived more control with leisure activities than with pain management and household activity -problem solving strategies used more frequently in relation to household activities in comparison with pain management or leisure activities -escape/avoidance strategies less frequently used for leisure activities than for household activities or pain management -greater disability and symptom severity were associated with less perceived ability to perform an activity, and manage pain, less satisfaction with the ability to perform an activity and manage pain as well as less perceived control over activity and management pain

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Greene, Johnson & Melamed (1991)	-USA -rheumatology clinic -RA	- N =11 pseudo-allergic group (8 W; 3 M); ctrl matched W -mean age of 53 years for control group and 52 years for pseudo-allergic group	-double-blind study: 2 groups (1 with belief of food allergy influencing RA symptoms = pseudo allergic group and 1 ctrl group)	-mental health (mental health distress and well-being; self-report) -impact of illness (self-report) -coping strategies (self-report) -health locus of control (self-report)	-higher belief in chance and powerful others found in control group -higher internal locus of control and lower belief in chance and powerful others found in pseudo-allergic group -pseudo-allergic group engaged in more information-seeking -wishful thinking was higher in control group -higher psychological well-being and overall mental health found in the pseudo-allergic group
Hong Tak (1998)	-USA -community arthritis, orthopaedic and medical clinics -OA	-N=107 W -mean age of 74 years	-correlational -cross-sectional	-physical functioning (self-report) -chronic daily stress (self-report) -coping strategies (self-report) -personal control beliefs (self-report) -perceived social support (self-report) -life satisfaction (self-report)	-lower physical functioning positively correlated with higher external locus of control and with higher use of emotion-focused coping strategies -higher physical functioning related to higher internal locus of control and greater perceived social support -higher physical functioning related to greater life satisfaction -chronic daily stress related to higher use of emotion- focused coping -higher internal locus of control as well

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
					as greater use of problem-focused coping were both positively related to perceived social support -internal locus of control was positively related to life satisfaction -greater perceived social support was positively related with life satisfaction -perceived social support and internal locus of control significantly predicted life satisfaction -older age was associated with lower physical functioning, lower internal locus of control, greater use of emotion-focused coping and problem-focused coping
Jordan, Lumley & Leisen (1998)	-USA -hospital outpatient rheumatology clinic -RA	-N=48 AA with a mean age of 55 years; 52 Caucasians with a mean age of 54 years	-correlational -cross-sectional	-pain coping strategies (self-report) -pain control beliefs (self-report) -pain severity (self-report) -depressive symptoms (self-report) -anxious symptoms (self-report) -inactivity (household chores, outdoor work, social activities, activities away from home)	-correlations between diverting attention and praying/hoping, and intercorrelations among ignoring pain, reinterpreting pain and coping self-statements -diverting attention and praying/hoping more frequent among AA and positively correlated with inactivity -coping statements and ignoring pain more frequent among Caucasians -for AA, use of reinterpreting pain was positively correlated with pain severity and negative affect

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
				-behavioral impairment (2 objective measures) -disease activity (rheumatologist assessment)	-perceived pain control was not significantly different between groups after controlling for ethnic group differences in income -groups not significantly different in negative affect -for entire sample (after control of socioeconomic status, behavioural impairment and disease activity), the use of diverting attention was positively associated with pain and the use of coping statements; ignoring pain was negatively related to negative affect and inactivity; greater pain control beliefs negatively correlated with pain, negative affect and inactivity
Murphy, Dickens, Creed & Bernstein (1999)	-United Kingdom -outpatient clinics -RA	-52 W -10 M -median age of 59.5 years	-correlational -cross-sectional	-disability (self-report) -disease severity (physical exam) -perceived control (self-report) -illness representation (self-report) -anxious and depressive symptoms (self-report) -coping strategies (self-report)	-perception of control was negatively related to depressive symptoms, even after controlling for disability severity -most frequent coping strategies: avoidance and resting -least frequent coping strategies: «my arthritis has helped me to develop into a better person» -RA patients tended to use more passive-avoidance coping strategies -positive relationship between depressive symptoms and disability

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
				-events of childhood (interview)	-depressive symptoms associated with perception of serious illness consequences, less control over illness and no cure -depressed patients used more passive and avoidance coping strategies
Parker et al. (1988)	-USA -rheumatology outpatient clinic -RA	-N=81 M; 3 W -mean age of 60.6 years	-correlational -cross-sectional	-disease activity (by staff) -2 measures of pain (self-report) -functional and psychosocial status (self-report) -daily stress (self-report) -coping strategies (self-report) -psychological status, including depressive symptoms, psychological symptoms, daily hassles and helplessness (self-report) (self-report) -depressive symptoms (self-report)	-helplessness was negatively correlated with cognitive restructuring and positively associated with wish fulfilling fantasy -most frequent strategies: wish fulfilling fantasy, cognitive restructuring, threat minimization -least frequent strategies: emotional expression, self-blame -cognitive restructuring was negatively related to functional impairment -wish fulfilling fantasy, self-blame and threat minimization were positively associated with functional impairment -cognitive restructuring had a significant negative association with depression -wish fulfilling fantasy and self-blame positively correlated with depression -cognitive restructuring negatively correlated with psychological distress -wish fulfilling fantasy, self-blame, threat minimization positively related with psychological distress

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
Scharloo et al. (1999)	-Netherlands -rheumatology outpatient clinic -RA	-71 (53 W; 18 M) -mean age of 52.2 years	-correlational longitudinal (2 time measure)	-disease activity (measured by clinician) -illness perception, including perceived control (interview) -functional disability (self-report) -pain and tiredness (self-report) -depressive and anxious symptoms (self-report) -coping strategies (self-report)	-less perceived control was associated with more hospital admission -higher use of reassuring thoughts and less active coping were positively correlated --avoidant coping strategies were associated with more tiredness -passive coping (avoidance), belief that the illness will last a long time and that it entails strong consequences were associated with more anxious symptoms -more perceived symptoms were associated with more depression
Smith (2002)	-USA -community -RA and OA	-N=172 W (82 RA; 90 OA) -mean age of 63.8 years	-correlational -longitudinal (2 time measure for vulnerability and resilience and 12-time measure for pain, NA and PA)	-activity limitation (self-report) -anxious and depressive symptoms (self-report) -helplessness (self-report) -locus of control (self-report) -pain (self-report) -coping strategies (self-report) -neuroticism/extraversion (self-report) -optimism/pessimism (self-report) -positive and negative affect (self-report)	-arthritis helplessness was positively associated with negative affect for RA, but not for OA -helplessness was negatively related to positive affect and positively related to avoidant coping, depression, anxiety and negative affect -active coping was negatively correlated with helplessness, anxiety as well as depression and positively associated with positive affect -avoidant coping was positively correlated with anxiety, depression and negative affect -helplessness and avoidant coping significantly predicted negative affect

Table 1 (continued)

Study	Country and Context of Study	Sample (N, Age, Sex)	Design	Measures	Results
				-purpose in life (self-report)	(current and future) -helplessness significantly and negatively predicted current positive affect -active coping positively predicted current and future positive affect -positive reinterpretation/growth positively predicted current and future positive affect -no significant difference between OA and RA
Smith & Wallston (1992)	-Tennessee, USA -4 rheumatology practices -RA	-N=58 M; 181 W -mean age of 50.5 years	-correlational -longitudinal (8 measures over 4 years)	-physical functioning (self-report) -health status – arthritis (self-report) -life satisfaction (self-report) -depressive symptoms (self-report) -2 measures of pain (self-report) -RA flare index (self-report) -psychosocial impairment (e.g. sleep, leisure/social, work, family relationship) -perceived competence (self-report)	-arthritis helplessness was significantly associated with poor health, poor functioning and low perceived competence -arthritis helplessness was also positively correlated with chance locus of control, passive coping with pain and depression -passive coping with pain predicted an increase in psychosocial impairment -short term psychosocial impairment directly influenced long term health status

Table 1 (continued)

Study .	Country and Context of Study	Sample (N, Age, Sex)	Design .	Measures	Results .
				-locus of control (self-report) -perceived emotional support (self-report) -instrumental support (self-report) -extent of social support (self-report) -helplessness (self-report) -coping strategies (self-report)	

Note.

N = number. W = woman. M = men. RA = rheumatoid arthritis. OA = osteoarthritis. SL = Systemic lupus erythematosus. FM = fibromyalgia. OP = Osteoporosis. Ctrl = control. AA = African Americans.

Appendix B

HÔPITAL MONFORT
MONFORT HOSPITAL
[illegible]

SERVICE D'ORTHOPÉDIE

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services à l'Hôpital Monfort. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontra à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 562-5800 #4456 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Signature du médecin traitant
Hôpital Monfort

Appendix C

HÔPITAL MONFORT
MONFORT HOSPITAL
713 Charlemagne Boul., Ottawa, ON, K1K 0T2
Tel.(613) 746-4621, Fax.(613) 748-4914

SERVICE D'ORTHOPÉDIE

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services à l'Hôpital Monfort. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontra à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 562-5800 #4456 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Signature du médecin traitant
Hôpital Monfort

Appendix D

HÔPITAL MONFORT
MONFORT HOSPITAL
713 Cyrville Montfort Rd., Ottawa, ON, K1K 0T2
Tel.(613) 746-4621, Fax(613) 748-4814

SERVICE D'ORTHOPÉDIE

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services à l'Hôpital Monfort. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontra à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 562-5800 #4456 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Signature du médecin traitant
Hôpital Monfort

Appendix E

HÔPITAL MONFORT
MONFORT HOSPITAL
713 Chemin Montréal Rd., Ottawa, Ont. K1K 0T2
Tel.(613) 746-4621, Fax (613) 748-4816

SERVICE D'ORTHOPÉDIE

Bonjour madame.

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services à l'Hôpital Monfort. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontra à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 565-5841 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Signature du médecin traitant
Hôpital Monfort

Appendix F

The Ottawa Hospital
L'Hôpital d'Ottawa

CLINIQUE D'ORTHOPÉDIE DE L'HÔPITAL D'OTTAWA, CAMPUS GÉNÉRAL

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services à l'Hôpital d'Ottawa. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontrera à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 565-5841 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Dr. Paul Kim
Hôpital d'Ottawa, Campus Général

Appendix G

Centre hospitalier
des Vallées de l'Outaouais

CLINIQUE D'ORTHOPÉDIE DE HULL

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Outawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services au Centre hospitalier des Vallées de l'Outaouais. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontre à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 565-5841 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Suzanne Boucher
Infirmière
Centre Hospitalier des Vallées de l'Outaouais
Date: Le 19 novembre 2003

Appendix H

Centre hospitalier
des Vallées de l'Outaouais

CLINIQUE D'ORTHOPÉDIE DE GATINEAU

Bonjour madame,

Pendant la période d'attente de votre chirurgie pour un genou ou une hanche, nous vous offrons l'occasion de participer à une étude sur l'arthrose. Cette recherche est menée par une étudiante au doctorat en psychologie clinique de l'Université d'Ottawa (Vicky Rivard), sous la supervision du Professeur Philippe Cappeliez. Cette recherche a pour but de mieux comprendre comment les femmes qui ont de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à identifier les façons de penser ainsi que les façons de faire qui vous aident à mieux vivre avec les limitations que vous cause l'arthrose.

Vous n'êtes pas obligée de participer à l'étude, si vous refusez, vous ne serez pas pénalisée, c'est-à-dire que ceci n'affectera pas vos services au Centre hospitalier des Vallées de l'Outaouais. Si vous acceptez de participer à l'étude, 60 à 90 minutes de votre temps seront requises pour répondre à des questions lors de votre rencontre avec l'étudiante. Elle vous rencontrera à l'endroit de votre choix et pourra même se rendre chez vous afin que vous n'ayez pas à vous déplacer. Cette entrevue sera une opportunité pour vous de partager votre expérience avec l'arthrose. Vous pourrez vous retirer de l'étude en tout temps, avant ou pendant l'entrevue.

Si vous êtes intéressée à participer à cette étude sur l'arthrose ou si vous désirez obtenir plus d'information, s'il-vous-plaît téléphonez à Vicky Rivard au 565-5841 et laissez un message téléphonique qui comprend votre nom et votre numéro de téléphone. L'étudiante se fera un plaisir de vous rappeler.

Lise Aubin
Infirmière
Centre Hospitalier des Vallées de l'Outaouais
Date : Le 19 novembre 2002

Appendix I

Université d'Ottawa
University of Ottawa

FORMULAIRE DE CONSENTEMENT

Vicky Rivard
Candidate au doctorat en psychologie clinique
École de psychologie, Université d'Ottawa
(613) 562-5800 poste 4456; courriel: vrivard@sympatico.ca

Je,_____, suis intéressée à collaborer à cette recherche menée par Vicky Rivard étudiante au doctorat en psychologie clinique de l'Université d'Ottawa, sous la supervision du Professeur Philippe Cappeliez. L'objectif de cette recherche est de mieux comprendre comment les femmes souffrant de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à évaluer le sentiment de contrôle et les stratégies d'adaptation (manières de faire et de penser) envers des limitations d'activités (difficultés physiques) causées par l'arthrose. Les limitations d'activités peuvent inclure: une difficulté à marcher, à s'asseoir et/ou à se lever, à utiliser les escaliers, à cuisiner. Pour effectuer cette étude, un total de 100 participantes est visé.

En premier lieu, je dois compléter une brève évaluation (environ 10 minutes) de mes capacités mentales (par exemple, ma capacité à comprendre des instructions et à me rappeler de mots) avant de participer à cette entrevue complète sur les difficultés physiques dues à l'arthrose. Dans le cas où je ne rencontre pas les critères établis pour cette recherche, je participerai à une courte entrevue sur mon expérience avec l'arthrose.

Ma participation implique que je réponde à une série de questions sur les difficultés physiques dues à l'arthrose, leurs conséquences ainsi que mes pensées et mes actions pour mieux vivre avec ces difficultés physiques. Ces questions seront posées sous forme d'une entrevue d'environ une heure. Cette entrevue sera administrée soit par Vicky Rivard, par Micheline Allard (candidate au doctorat en psychologie clinique) ou par Michelle Beaupré (étudiante de 4^{ième} année au baccalauréat en psychologie). L'information recueillie dans le cadre de cette étude ne servira qu'aux seules fins de cette étude et elle ne sera accessible qu'aux quatre personnes susmentionnées (V. Rivard, P. Cappliez, M. Allard et M. Beaupré) tout en respectant l'anonymat et la confidentialité.

Je comprends que, par ma participation à cette étude, je vais donner des informations personnelles, ce qui pourrait avoir pour effet d'entraîner quelques réactions émotionnelles dans le cas de difficultés dues à l'arthrose. Les chercheures m'ont assuré que l'entrevue sera effectuée de façon à minimiser ces risques. En cas de réactions émotionnelles importantes, je peux contacter Vicky Rivard ou Dr. Philippe Cappeliez qui m'orienteront vers des services appropriés à mes besoins. Je peux aussi contacter les ressources suivantes en cas de besoin :

-Centre d'aide 24/7	595-9999 (ligne d'écoute, situation de crise, renseignements sur les ressources de la communauté)
-Tel-Aide Outaouais	741-6433 (ligne d'écoute, situation de crise, renseignements sur les ressources de la communauté)
-Centre des services psychologiques, Université d'Ottawa	562-5289 (services psychologiques desservant la communauté d'Ottawa et les régions environnantes)
-Société de l'arthrite	723-6574 (informations sur l'arthrite, services sociaux à domicile)
-Services psycho-gériatriques communautaires d'Ottawa-Carleton	562-9777 (services psychologiques, counselling)

En participant à cette recherche je ne bénéficierai pas directement des résultats de l'étude. Cependant, il se peut que je trouve bénéfique de parler de mon expérience avec l'arthrose.

Cette étude pourrait comporter des avantages pour la science médicale et la psychologie en renseignant les professionnels de la santé de ce qui peut aider à mieux vivre avec les difficultés physiques engendrées par l'arthrose. Les connaissances obtenues par l'entremise de cette étude pourraient menées éventuellement à la mise sur pied d'un service psychologique ayant pour but de favoriser une meilleure adaptation aux difficultés physiques dues à l'arthrose.

En participant à cette étude, je ne renonce à aucun de mes droits. Je suis libre de me

retirer de la recherche en tout temps sans être pénalisée d'aucune manière. Ceci veut dire que mes services à l'Hôpital ne seront pas affectés par mon retrait de la recherche. J'ai été informée par les chercheures que l'information que je vais communiquer dans le cadre de l'entrevue demeura confidentielle. L'anonymat sera assuré par un code composé des deux premières lettres de mon prénom suivi des deux premières lettres de mon nom de famille et d'un chiffre. Ce code sera inscrit sur les formulaires d'entrevue au lieu de mon nom. Les formulaires seront conservés dans un classeur verrouillé au laboratoire de recherche du superviseur Dr. Philippe Cappeliez pour une durée de 5 ans. Après cette période, ils seront détruits.

Deux copies de ce formulaire de consentement seront signées, une à conserver pour la recherche et l'autre qui me sera remise.

Pour toute information supplémentaire, je peux communiquer avec Dr. Philippe Cappeliez au 562-5800 poste 4806. Les coordonnées de la Responsable d'éthique en recherche sont les suivantes: 550, Cumberland, 562-5800 poste 1787, ethics@uottawa.ca

SIGNATURE DE LA PARTICIPANTE: _____
DATE: _____

SIGNATURE DE LA CHERCHEURE: _____

Appendix J

Université d'Ottawa
University of Ottawa

FORMULAIRE DE CONSENTEMENT

Vicky Rivard
Candidate au doctorat en psychologie clinique
École de psychologie, Université d'Ottawa
(613) 562-5800 poste 4456; courriel: vrivard@sympatico.ca

Je, _____, suis intéressée à collaborer à cette recherche menée par Vicky Rivard, étudiante au doctorat en psychologie clinique de l'Université d'Ottawa, sous la supervision du Professeur Philippe Cappeliez. L'objectif de cette recherche est de mieux comprendre comment les femmes souffrant de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à évaluer le sentiment de contrôle et les stratégies d'adaptation (manières de faire et de penser) envers des limitations d'activités (difficultés physiques) causées par l'arthrose. Les limitations d'activités peuvent inclure: une difficulté à marcher, à s'asseoir et/ou à se lever, à utiliser les escaliers, à cuisiner. Pour effectuer cette étude, un total de 100 participantes est recherché. À travers les deux cliniques externes d'orthopédie du Centre Hospitalier des Vallées de l'Outaouais (Hull et Gatineau), le recrutement de 80 participantes est visé.

En premier lieu, je dois compléter une brève évaluation (environ 10 minutes) de mes capacités mentales (par exemple, ma capacité à comprendre des instructions et à me rappeler de mots) avant de participer à cette entrevue complète sur les difficultés physiques dues à l'arthrose. Dans le cas où je ne rencontre pas les critères établis pour cette recherche, je participerai à une courte entrevue sur mon expérience avec l'arthrose.

Ma participation implique que je réponde à une série de questions sur les difficultés physiques dues à l'arthrose, leurs conséquences ainsi que mes pensées et mes actions pour mieux vivre avec ces difficultés physiques. Ces questions seront posées sous forme d'une entrevue d'environ 60 à 90 minutes (incluant l'évaluation des capacités mentales).

Cette entrevue sera administrée soit par Vicky Rivard ou par Micheline Allard, assistante de recherche et candidate au doctorat en psychologie clinique. L'information recueillie dans le cadre de cette étude ne servira qu'aux seules fins de cette étude et elle ne sera accessible qu'aux trois personnes susmentionnées (V. Rivard, P. Cappliez et M. Allard) tout en respectant l'anonymat et la confidentialité.

Je comprends que, par ma participation à cette étude, je vais donner des informations personnelles, ce qui pourrait avoir pour effet d'entraîner quelques réactions émotionnelles dans le cas de difficultés associées à l'arthrose. Les chercheures m'ont assuré que l'entrevue sera effectuée de façon à minimiser ces risques. En cas de réactions émotionnelles importantes, je peux contacter Vicky Rivard ou Dr. Philippe Cappeliez qui m'orienteront vers des services appropriés à mes besoins. Je peux aussi contacter les ressources suivantes en cas de besoin:

-Centre d'aide 24/7	595-9999 (ligne d'écoute, situation de crise, renseignements sur les ressources de la communauté)
-Centre des services psychologiques, Université d'Ottawa	562-5289 (services psychologiques desservant la communauté d'Ottawa et les régions environnantes)
-Société de l'arthrite à domicile)	723-6574 (informations sur l'arthrite, services sociaux

En participant à cette recherche je ne bénéficierai pas directement des résultats de l'étude. Cependant, il se peut que je trouve bénéfique de parler de mon expérience avec l'arthrose.

Cette étude pourrait comporter des avantages pour la science médicale et la psychologie en renseignant les professionnels de la santé de ce qui peut aider à mieux vivre avec les difficultés physiques engendrées par l'arthrose. Les connaissances obtenues par l'entremise de cette étude pourraient menées éventuellement à la mise sur pied d'un service psychologique ayant pour but de favoriser une meilleure adaptation aux difficultés physiques dues à l'arthrose.

Perception de contrôle, stratégies d'adaptation, symptômes anxieux et dépressifs chez des femmes âgées ayant des limitations d'activités dues à l'arthrose.
Révisé le 4 janvier 2004.

En participant à cette étude, je ne renonce à aucun de mes droits. Je suis libre de me retirer de la recherche en tout temps sans être pénalisée d'aucune manière. Ceci veut dire que mes services à l'Hôpital ne seront pas affectés par mon retrait de la recherche.

J'ai été informée par les chercheures que l'information que je vais communiquer dans le cadre de l'entrevue demeura confidentielle. L'anonymat sera assuré par un code composé des deux premières lettres de mon prénom suivi des deux premières lettres de mon nom de famille et d'un chiffre. Ce code sera inscrit sur les formulaires d'entrevue au lieu de mon nom. Les formulaires seront conservés dans un classeur verrouillé au laboratoire de recherche du superviseur Dr. Philippe Cappeliez pour une durée de 5 ans. Après cette période, ils seront détruits.

Deux copies de ce formulaire de consentement seront signées, une à conserver pour la recherche et l'autre qui me sera remise.

Pour information supplémentaire, je peux communiquer avec Vicky Rivard au 562-5800 poste 4456 ou avec Dr. Philippe Cappeliez au 562-5800 poste 4806. Pour toute question d'ordre éthique, je peux contacter le président du Comité d'éthique de la recherche du Centre hospitalier des Vallées de l'Outaouais, au 561-8144.

SIGNATURE DE LA PARTICIPANTE: _____

DATE: _____

SIGNATURE DE LA CHERCHEURE: _____

Appendix K

The Ottawa Hospital
L'Hôpital d'Ottawa

FORMULAIRE DE CONSENTEMENT

Vicky Rivard
Candidate au doctorat en psychologie clinique
École de psychologie, Université d'Ottawa
(613) 562-5800 poste 4456; courriel:

Je, _____, suis intéressée à collaborer à cette recherche menée par Vicky Rivard étudiante au doctorat en psychologie clinique de l'Université d'Ottawa, sous la supervision du Professeur Philippe Cappeliez. L'objectif de cette recherche est de mieux comprendre comment les femmes souffrant de l'arthrose vivent avec cette forme d'arthrite. L'étude vise à évaluer le sentiment de contrôle et les stratégies d'adaptation (manières de faire et de penser) envers des limitations d'activités (difficultés physiques) causées par l'arthrose. Les limitations d'activités peuvent inclure: une difficulté à marcher, à s'asseoir et/ou à se lever, à utiliser les escaliers, à cuisiner.

En premier lieu, je dois compléter une brève évaluation (environ 10 minutes) de mes capacités mentales (par exemple, ma capacité à comprendre des instructions et à me rappeler de mots) avant de participer à cette entrevue complète sur les difficultés physiques dues à l'arthrose. Dans le cas où je ne rencontre pas les critères établis pour cette recherche, je participerai à une courte entrevue sur mon expérience avec l'arthrose.

Ma participation implique que je réponde à une série de questions sur les difficultés physiques dues à l'arthrose, leurs conséquences ainsi que mes pensées et mes actions pour mieux vivre avec ces difficultés physiques. Ces questions seront posées sous forme d'une entrevue d'environ 60 à 90 minutes (incluant l'évaluation des capacités mentales). Cette entrevue sera administrée soit par Vicky Rivard, par Micheline Allard (candidate au doctorat en psychologie clinique) ou par Michelle Beaupré (étudiante de 4^{ième} année au baccalauréat en psychologie). L'information recueillie

dans le cadre de cette étude ne servira qu'aux seules fins de cette étude et elle ne sera accessible qu'aux quatre personnes susmentionnées (V. Rivard, P. Cappliez, M. Allard et M. Beaupré) tout en respectant l'anonymat et la confidentialité.

Je comprends que, par ma participation à cette étude, je vais donner des informations personnelles, ce qui pourrait avoir pour effet d'entraîner quelques réactions émotionnelles dans le cas de difficultés dues à l'arthrose. Les chercheures m'ont assuré que l'entrevue sera effectuée de façon à minimiser ces risques. En cas de réactions émotionnelles importantes, je peux contacter Vicky Rivard ou Dr. Philippe Cappeliez qui m'orienteront vers des services appropriés à mes besoins. Je peux aussi contacter les ressources suivantes en cas de besoin :

-Centre d'aide 24/7	595-9999 (ligne d'écoute, situation de crise, renseignements sur les ressources de la communauté)
-Tel-Aide Outaouais	741-6433 (ligne d'écoute, situation de crise, renseignements sur les ressources de la communauté)
-Centre des services psychologiques, Université d'Ottawa	562-5289 (services psychologiques desservant la communauté d'Ottawa et les régions environnantes)
-Société de l'arthrite	723-6574 (informations sur l'arthrite, services sociaux à domicile)
-Services psycho-gériatriques communautaires d'Ottawa-Carleton	562-9777 (services psychologiques, counselling)

En participant à cette recherche je ne bénéficierai pas directement des résultats de l'étude. Cependant, il se peut que je trouve bénéfique de parler de mon expérience avec l'arthrose.

Cette étude pourrait comporter des avantages pour la science médicale et la psychologie en renseignant les professionnels de la santé de ce qui peut aider à mieux vivre avec les difficultés physiques engendrées par l'arthrose. Les connaissances obtenues par l'entremise de cette étude pourraient menées éventuellement à la mise sur pied d'un service psychologique ayant pour but de favoriser une meilleure

adaptation aux difficultés physiques dues à l'arthrose.

En participant à cette étude, je ne renonce à aucun de mes droits. Je suis libre de me retirer de la recherche en tout temps sans être pénalisée d'aucune manière. Ceci veut dire que mes services à l'Hôpital ne seront pas affectés par mon retrait de la recherche. J'ai été informée par les chercheures que l'information que je vais communiquer dans le cadre de l'entrevue demeura confidentielle. L'anonymat sera assuré par un code composé des deux premières lettres de mon prénom suivi des deux premières lettres de mon nom de famille et d'un chiffre. Ce code sera inscrit sur les formulaires d'entrevue au lieu de mon nom. Les formulaires seront conservés dans un classeur verrouillé au laboratoire de recherche du superviseur Dr. Philippe Cappeliez pour une durée de 15 ans. Après cette période, ils seront détruits.

Deux copies de ce formulaire de consentement seront signées, une à conserver pour la recherche et l'autre qui me sera remise.

Pour toute information supplémentaire, je peux communiquer avec Dr. Philippe Cappeliez au 562-5800 poste 4806. Pour toute question d'ordre éthique, je peux contacter la coordinatrice d'éthique à l'Hôpital d'Ottawa au 798-5555, poste 14902.

SIGNATURE DE LA PARTICIPANTE: _____

DATE: _____

SIGNATURE DE LA CHERCHEURE: _____

Perception de contrôle, stratégies d'adaptation, symptômes anxieux et dépressifs chez des femmes âgées ayant des limitations d'activités dues à l'arthrose. Cette étude est approuvée jusqu'au 22 juin 2005.

Appendix L

PROTOCOLE D'ADMINISTRATION DU MMSE

Matériel nécessaire: Montre (pouvant servir de chronomètre)
Crayon à mine de plomb muni d'une gomme à effacer,
Feuille de papier d'environ 8`` x 10 ``

1. Enregistrement

Instructions
Dire à la personne: « Je vais vous dire trois mots dont vous devrez vous rappeler. Répétez les-moi lorsque j'aurai fini de vous les dire tous les trois ». Prendre une seconde pour dire chacun des mots. Si elle fait une erreur, répéter jusqu'à ce qu'elle apprenne les trois (3) mots mais en ne dépassant pas six (6) essais.

Mots: **Chemise, bleu, honnêteté**

Si une personne est évaluée à plusieurs reprises, les choix de « chaussures, brun, modestie » et « chandail, blanc, charité » pourront être utilisés lors des évaluations successives.

Pointage: Accorder un point pour chaque bonne réponse **lors du premier essai**. Encerclez le nombre de bonnes réponses.

Total: 0 1 2 3

2. Réversibilité mentale

a. Instructions
Demander d'abord à la personne de compter dans l'ordre croissant en l'aidant une fois si nécessaire. Puis, lui demander de compter à nouveau, mais en inversant l'ordre des chiffres. Pour une meilleure compréhension de la consigne, utiliser les termes: « compter à l'envers » ou « compter à reculons ».

a. croissant: 1-2-3-4-5
b. décroissant: 5-4-3-2-1

Pointage: Seulement pour **ordre décroissant**

Exact	2
1 à 2 erreurs	1
3 erreurs et +	0

b. Instructions
Demander à la personne d'épeler le mot « **monde** » à l'envers. Au besoin, utiliser l'expression: « en commençant par la fin ».

Pointage: 0 1 2 3 4 5 (1 point par lettre)

3. Premier rappel

Instructions: Dire à la personne: « Quels sont les trois (3) mots que je vous ai demandé de vous rappeler ». (réponse: chemise, bleu, honnêteté)

Pointage: Allouer 1 point par mot adéquatement donné sans renseignement, ni choix.
Total: 0 1 2 3

4. Orientation temporelle

Instructions: Demander à la personne de dire l'**année**, ensuite, la **saison**, le **mois,** la **date du jour** et enfin, le **jour de la semaine**

Pointage: Allouer 1 point par réponse adéquate. Aucune marge d'erreur n'est acceptée.
Total: 0 1 2 3 4 5

5. Orientation spatiale

Instructions: Demander à la personne: **« Dans quelle province sommes-nous? »; « Dans quel pays? »; « Dans quelle ville ou village? »; « Où sommes-nous?»**

Pointage: Noter 1 point pour chaque réponse exacte à « province » (0 1), « pays » (0 1), « ville ou village » (0 1); « endroit où elle se trouve » (0 1 2; ex. Hôpital et étage)

6. Dénomination

Instructions: Demander à la personne de **nommer un crayon puis une montre** en lui montrant les objets un après l'autre.

Pointage: Noter 1 point par réponse exacte.
Total: 0 1 2

7. Répétition

Instructions: Dire à la personne: « Répétez ce que je dis. (PAUSE). **Pas plus si que jamais** ».

Pointage: Accorder un point si la personne répète sans erreur « pas plus si que jamais ».
0 1

8. Consigne écrite

Instructions: Tenir à la vue de la personne la feuille sur laquelle est imprimée la consigne: « **Veuillez fermer les yeux!** » et dire: « S'il vous plait, faites ceci ».

Pointage: Accorder 1 point si la personne ferme les yeux sans incitation.
0 1

9. Écriture

Instructions: Demander à la personne d'écrire une phrase pour vous, peu importe laquelle.

Pointage: Calculer 1 point pour un phrase complète, c'est-à-dire avec un sujet, un verbe et ayant un sens.
0 1
Les fautes de grammaire et erreurs de ponctuation ne sont pas pénalisées.

10. Copie du pentagone

Instructions: Demander à la personne de reproduire la figure des deux pentagones imprimés sur la feuille annexée. Lui remettre le crayon à mine de plomb muni d'une efface. Accorder une (1) minute pour la copie des deux pentagones.

Pointage: Donner 1 point si les 10 angles et les 2 intersections sont présents. Ne pas pénaliser les tremblements.
0 1

11. Consignes en 3 étapes

Instructions: Tenir à la vue de la personne, mais hors de sa portée une feuille de papier et dire les instructions inscrites dans le test. Demander l'utilisation de la main gauche si elle est droitière et de la main droite si elle est gauchère. Après avoir donné toutes les instructions, tenir la feuille de papier à la portée de la personne, mais sans lui tendre. Ne répéter aucune des instructions. Ne pas donner d'indice visuel suggérant à la personne de redonner le papier. (Exemple: tendre la main pour recevoir).
Dire: **« Prenez ce papier de la main droite/gauche, pliez le en deux et redonnez le moi ».**

Pointage: 1 point pour chaque consigne réussie. Enlever 1 point si la personne n'utilise pas la bonne main.
Total: 0 1 2 3

TOTAL : /30

Appendix M

Informations démographiques

Numéro de code: _____

Dire: "Je vais maintenant vous poser des questions d'ordre général".

1. Âge: ____ ans

2. État civil:

a) mariée ____ d) célibataire _____
b) conjointe de fait ____ e) veuve _____
c) séparée ou divorcée ____ f) autre (spécifiez) _____

3. Nombre total d'années d'éducation complétées: _____années (à partir de la 1ère année)

4. Revenu annuel: a) 0 to $9,999
b) 10 to $20,999
c) 21 to $30,999
d) 31 to $40,999
e) 41 to $50,999
f) $51,000 et plus

5. Comment considérez-vous votre situation financière:

a) très insatisfaisante ____ b) plutôt insatisfaisante ____
c) modérément satisfaisante ____ d) plutôt satisfaisante _____
e) très satisfaisante ____

6. Depuis combien de temps souffrez-vous d'arthrose: _____ an(s)
ou _____ mois

7. Médication pour l'arthrose: a) oui ____ b) non ____
Si oui, depuis: ____ mois ou _____ an(s)
nom du médicament et dose _____

8. Êtes-vous un aidant naturel (prendre soins d'une personne malade ou en perdre d'autonomie)? a) oui ____ b) non ____
Si oui, qui: a) époux ____ b) parent ____ c) enfant _____

Appendix N

AIMS2-F

Pour chaque question, cochez d'une croix (x) la réponse qui convient le mieux.

Ces questions concernent: LES CAPACITÉS DE DÉPLACEMENTS

	Tous les jours	Presque tous les jours	Certains jours	Rarement	Jamais
AU COURS DE LA DERNIÈRE SEMAINE...					
1. Avez-vous été physiquement capable de conduire une voiture ou d'utiliser les transports en commun?	☐	☐	☐	☐	☐
2. Êtes-vous sorti(e) de chez vous au moins une partie de la journée?	☐	☐	☐	☐	☐
3. Avez-vous été capable de faire des courses dans le quartier?	☐	☐	☐	☐	☐
4. Avez-vous eu besoin de l'aide de quelqu'un pour vous déplacer en dehors de chez-vous?	☐	☐	☐	☐	☐
5. Êtes-vous resté(e) assis(e) ou couché(e) presque toute la journée ou toute la nuit?	☐	☐	☐	☐	☐

Pour chaque question, cochez d'une croix (x) la réponse qui convient le mieux.

Ces questions concernent: LA MARCHE ET LA SOUPLESSE

	Tous les jours	Presque tous les jours	Certains jours	Rarement	Jamais
AU COURS DE LA DERNIÈRE SEMAINE...					
6. Avez-vous eu des difficultés à faire certaines activités physiques intenses telles que: courir, soulever des objets lourds ou faire du sport?	☐	☐	☐	☐	☐
7. Avez-vous eu des difficultés à marcher plusieurs centaines de mètres ou monter plusieurs étages?	☐	☐	☐	☐	☐
8. Avez-vous eu des difficultés à vous pencher ou vous relever?	☐	☐	☐	☐	☐
9. Avez-vous eu des difficultés à marcher cent mètres ou monter un étage?	☐	☐	☐	☐	☐
10. Pour marcher, avez-vous eu besoin de l'aide de quelqu'un ou d'une canne, de béquilles ou d'un appareillage?	☐	☐	☐	☐	☐

Pour chaque question, cochez d'une croix (x) la réponse qui convient le mieux.

Ces questions concernent: LES SOINS PERSONNELS

	Tous les jours	Presque tous les jours	Certains jours	Rarement	Jamais
AU COURS DE LA DERNIÈRE SEMAINE...					
11.Avez-vous eu besoin de l'aide de quelqu'un pour prendre un bain ou une douche?	☐	☐	☐	☐	☐
12.Avez-vous eu besoin de l'aide de quelqu'un pour vous habiller?	☐	☐	☐	☐	☐
13.Avez-vous eu besoin de l'aide de quelqu'un pour utiliser les toilettes?	☐	☐	☐	☐	☐
14.Avez-vous eu besoin de l'aide de quelqu'un pour vous mettre au lit ou en sortir?	☐	☐	☐	☐	☐

Pour chaque question, cochez d'une croix (x) la réponse qui convient le mieux.

Ces questions concernent: LES TÂCHES MÉNAGÈRES

	Tous les jours	Presque tous les jours	Certains jours	Rarement	Jamais
AU COURS DE LA DERNIÈRE SEMAINE...					
15.En supposant que vous aviez ce qu'il faut pour le faire, auriez-vous été capable de faire vos courses sans l'aide de quelqu'un?	☐	☐	☐	☐	☐
16.En supposant que vous aviez ce qu'il faut pour le faire, auriez-vous été capable de préparer vos repas sans l'aide de quelqu'un?	☐	☐	☐	☐	☐
17.En supposant que vous aviez ce qu'il faut pour le faire, auriez-vous été capable de faire le ménage chez-vous sans l'aide de quelqu'un?	☐	☐	☐	☐	☐
18.En supposant que vous aviez ce qu'il faut pour le faire, auriez-vous été capable de faire votre lessive sans l'aide de quelqu'un?	☐	☐	☐	☐	☐

Appendix O

Mesure d'évaluation du stress

Ce questionnaire s'intéresse à vos pensées au sujet de la limitation d'activités associée à l'arthrose. Veuillez décrire une situation stressante que vous avez vécue la semaine dernière où vous avez été limité dans votre activité à cause de l'arthrose:

_____

_____

_____

_____

Veuillez répondre à partir de votre point de vue ACTUEL de cette situation. Il n'y a pas de bonne ou de mauvaise réponse. Nous vous demandons de bien vouloir répondre à TOUTES les questions. Répondez à chacune des questions en ENCERCLANT le numéro approprié correspondant à l'échelle suivante.

1	2	3	4	5
Pas du tout	Un peu	Modérément	Beaucoup	Énormément

1. Ai-je la capacité de me débrouiller dans cette situation? 1 2 3 4 5

2. Ai-je ce qu'il faut pour me débrouiller dans cette situation?..1 2 3 4 5

3. Serai-je capable de surmonter le problème? 1 2 3 4 5

4. Est-ce que je possède les habiletés nécessaires pour obtenir un résultat favorable dans cette situation?.....1 2 3 4 5

Appendix P

COPE-F

Nous nous intéressons aux réactions des personnes confrontées à des limitations d'activités dues à l'arthrose. Il y a plusieurs manières de faire face à de telles limitations. Ce questionnaire vous demande d'indiquer comment vous réagissez quand vous faites face à la situation stressante décrite dans le questionnaire précédent (situation stressante reliée à la limitation d'activités due à l'arthrose):

_____

_____

Indiquez le degré auquel vous faites ce que les énoncés suivants disent :

Sur une échelle de 1 à 4 :

1	2	3	4
Je ne fais pas cela du tout	Je fais cela un petit peu	Je fais cela moyennement	Je fais cela toujours

1.	J'abandonne mes efforts pour atteindre mon but.	1	2	3	4
2.	Je réduis mes efforts mis à résoudre le problème.	1	2	3	4
3.	Je fais ce que j'ai à faire, une étape à la fois.	1	2	3	4
4.	J'établis un plan d'action.	1	2	3	4
5.	J'essaie d'établir une stratégie pour ce que je dois faire.	1	2	3	4
6.	J'entreprends des démarches supplémentaires afin de me débarrasser du problème.	1	2	3	4
7.	Je me refuse à croire que cela arrive.	1	2	3	4
8.	Je m'efforce de faire quelque chose au sujet de la situation.	1	2	3	4
9.	J'abandonne toutes tentatives d'obtenir ce que je veux.	1	2	3	4
10.	Je me dis : ce n'est pas vrai!	1	2	3	4
11.	Je pense à la meilleure façon d'aborder le problème.	1	2	3	4
12.	Je fais semblant que cela n'arrive pas vraiment.	1	2	3	4
13.	Je pense aux étapes à prendre.	1	2	3	4
14.	Je pose une action directe qui me permet de contourner le problème.	1	2	3	4
15.	J'admets que je ne peux rien y faire et j'abandonne.	1	2	3	4
16.	J'agis comme si rien n'arrive.	1	2	3	4
17.	Je cherche quelque chose de bon dans ce qui arrive.	1	2	3	4
18.	J'essaie de voir la situation selon une perspective différente, en sorte qu'elle apparaisse plus positive.	1	2	3	4

Appendix Q

É H A D

Ce questionnaire est conçu pour nous aider à savoir comment vous vous sentez. Lisez chaque énoncé et **choisissez le chiffre** à côté de la réponse qui correspond le mieux à la manière dont vous vous êtes senti(e) **dans la dernière semaine.**

Ne prenez pas trop de temps à répondre; votre réaction immédiate à chaque énoncé nous fournira probablement une meilleure indication de ce que vous éprouvez qu'une réponse longuement réfléchie.

---

1. Je me sens tendu(e):
   1- La plupart du temps
   2- Très souvent
   3- De temps en temps
   4- Jamais

2. Je prends encore plaisir aux choses que j'aimais avant:
   1- Tout à fait autant
   2- Pas tout à fait autant
   3- Un peu seulement
   4- Presque pas du tout

3. J'éprouve une sorte de sensation de peur comme si quelque chose d'horrible allait arriver:
   1- Oui, très nettement et c'est plutôt grave
   2- Oui, mais ce n'est pas trop grave
   3- Un peu, mais cela ne m'inquiète pas
   4- Pas du tout

4. Je peux rire et voir le côté amusant des choses:
   1- Autant que par le passé
   2- Pas tout à fait autant maintenant
   3- Vraiment moins qu'avant
   4- Plus du tout

5. Des inquiétudes me passent par la tête:
   1- Très souvent
   2- Assez souvent
   3- De temps en temps mais pas trop souvent
   4- Seulement à l'occasion

6. Je me sens de bonne humeur:
   1- Jamais
   2- Pas souvent
   3- Parfois
   4- La plupart du temps

7. Je peux m'asseoir tranquille et me sentir détendu(e):
   1- Oui, tout à fait
   2- Habituellement
   3- Pas souvent
   4- Jamais

8. J'ai l'impression d'être au ralenti:
   1- Presque toujours
   2- Très souvent
   3- Parfois
   4- Pas du tout

9. J'éprouve une sorte de sensation de peur comme si j'avais des "papillons" dans l'estomac:
   1- Jamais
   2- Parfois
   3- Assez souvent
   4- Très souvent

10. Je ne m'intéresse plus à mon apparence:
   1- Je ne m'y intéresse plus du tout
   2- Je n'y accorde pas autant d'attention que je le devrais
   3- Il se peut que je n'y fasse pas autant attention
   4- J'y prête autant d'attention que par le passé

11. J'ai la bougeotte comme si je ne pouvais pas tenir en place:
   1- Oui, beaucoup
   2- Assez
   3- Pas beaucoup
   4- Jamais

12. J'envisage les choses à venir avec plaisir:
   1- Autant qu'avant
   2- Plutôt moins qu'avant
   3- Bien moins qu'avant
   4- Presque jamais

13. J'éprouve des sensations soudaines de panique:
    1- Vraiment très souvent
    2- Assez souvent
    3- Pas très souvent
    4- Jamais

14. Je peux prendre plaisir à un bon livre ou à une émission de radio ou de télévision:
    1- Souvent
    2- Parfois
    3- Peu souvent
    4- Très rarement