COPING, INFORMATION PREFERENCES, AND TREATMENT CHOICE IN MEN NEWLY DIAGNOSED WITH PROSTATE CANCER

by

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Abstract

Due to increased screening more men are being diagnosed with prostate cancer than ever before. In this case of early detection, several treatment options are appropriate, all impacting individuals' quality of life and varying in their inherent risks. Further, the variety of treatment options available may not compromise survival as an outcome. Because of these factors, making a treatment decision can be particularly difficult for men, and information needs surrounding treatment decision making is an important clinical issue. In the current prospective study there are two data collection points: after diagnosis with prostate cancer at the time of treatment decision making, and approximately four months later, after a treatment decision has been made. Questionnaire data were used to investigate men's disease-specific coping style and intolerance of uncertainty, information needs, level of preferred involvement in treatment decision making, knowledge regarding treatment options and side effects, emotional functioning and treatment choice. This project provides significant new knowledge concerning the coping style, information requirements, preferred level of involvement in treatment decision making, and emotional functioning of men at the time of treatment decision making. The study also examines the relative contributions of coping style and intolerance of uncertainty to anxiety and depression experienced by participants following treatment choice. Finally, this study explores the contribution of several variables to the types of treatments chosen by participants. In terms of coping, results indicate that monitoring and blunting were not related to distress indices. Both coping indices were related to information preferences at the time of diagnosis, but did not explain significant variance in preferred level of involvement in treatment decision making. Intolerance of uncertainty was predictive of time 2 depression, but not anxiety, but did not predict significant additional

variance in depression over and above coping style. No study variable was found to be predictive of treatment choice. Results are discussed in terms of clinical implications for screening individuals newly diagnosed with prostate cancer, with the aim of meeting the emotional and informational needs of individuals during this critical period of their cancer trajectory.

Preface

No part of the research presented in this document is published. I was the primary investigator on this project and I was primarily responsible for all phases of the research process including literature review, project design, application for ethics approval, data collection, data analysis, and writing of this dissertation. I worked under the direct supervision of Dr. Wolfgang Linden as the clinical program supervisor and Dr. Joyce Davison, the clinical site supervisor who provided mentorship and support as well as consultation and constructive feedback throughout the project. Under my supervision, various research assistants helped with data collection for this project (i.e. providing participants with questionnaires and entering data in data bases). Several urologists played a role in the current study but this consisted solely of allowing access to their patients. This project was approved by the University of British Columbia's Behavioral Research Ethics Board (certificate # H07-03132).

Table of Contents

Abstract	ii
Preface	iv
Table of Contents	V
List of Tables	viii
List of Figures	X
Acknowledgements	xi
1 Introduction	1
1.1 Traditional treatment options	1
1.2 Active surveillance	4
1.2.1 Active surveillance and uncertainty	9
1.3 Psychological distress	10
1.4 Predictors: monitoring, blunting, and intolerance of uncertainty	14
1.5 Coping and outcomes: information seeking, psychological distress, and treatmer	nt decision
making	18
1.5.1 Monitoring and information seeking	19
1.5.2 Monitoring and distress	
1.5.3 Monitoring, information seeking, and distress	
1.5.4 Treatment decision making	
1.5.5 Monitoring and preferred level of involvement in treatment decision making	
1.6 Interim summary	23
1.7 Intolerance of uncertainty	24
1.7.1 Intolernace of uncertainty and worry	
1.7.2 Intolerance of incertainty and percieved threat	
1.7.3 Intolerance of uncertainty, cognitive vigilance, and monitoring	
1.8 Intolerance of uncertainty and outcomes: information seeking and psychological	l distress29
1.8.1 Intolerance of uncertainty and information seeking	
1.8.2 Intolerance of uncertainty and distress	

	1.9	Cor	ntextualizing monitoring, blunting, and intolerance of uncertainty	32
	1.10	Sun	nmary and hypotheses	34
2	Me	etho	ds	38
	2.1	Part	ticipants	
	2.1	.1	Sampling	
	2.1	.2	Generalizability	39
	2.2	Stu	dv design	40
	2.3	Mea	asures	40
	2.3	.1	Demographics and disease characteristics	40
	2.3	.2	Miller Behavioral Styles Scale	40
	2.3	.3	Intolerance of Uncertainty Scale	42
	2.3	.4	Information resource preferences	43
	2.3	.5	Control Preferences Scale	44
	2.3	.6	Psychosocial Screening Instrument for Cancer	45
	2.3	.7	Knowledge questionnaire	46
	2.4	Pro	cedure	47
	2.4	.1	Time point one	47
		2.	4.1.1 A note on partners	48
	2.4	.2	Time point two	49
3	An	alys	es and results	50
	3.1	Pov	ver analyses	50
	3.2	Ass	umption testing	51
	3.3	Ana	lyses strategy	52
	3.4	San	ple description and reliability of the MBSS and IUS scales	52
	3.5	Cor	elational analyses investigating the main variables of interest	55
	3.5	.1	Correlations between time 1 variables	56
	3.5	.2	Correlations between time 1 and time 2 variables	57
	3.5	.3	Correlations between time 1 variables of interest and change scores in anxiety and	
depression			on	57
	3.5	.4	Effect size and direction of change in anxiety and depression over time	58
	3.6	Pre	dicitve analyses investigating proposed study hypotheses	59
	3.6	.1	Determination of control variables	59

	3.6.2	2 Relationship between monitoring and anxiety and depression, and blunting and ar	nxiety
	and depression		
	3.6.	Relationship between monitoring and information seeking, and blunting and infor	mation
	seek	ing; and monitoring and blunting and prefered level of involvment in treatment decision	on
	mak	ing	63
		3.6.3.1 Distinguishing monitoring and blunting	64
	3.6.4	Relationship between intolernace of uncertainty and psycholgical distress; relation	nship
	betv	veen monitoring, intolerance of uncertainty, and psycholoigcal distress	66
	3.6.	Relationship between intolerance of uncertainty and treatment choice; relationship	р
	betv	veen coping and demographic variables, and treatment choice	70
4	Dis	cussion	72
	4.1	The relationship between coping style and distress	73
	4.2	The relationship between coping style and information seeking, and and coping style a	and
	prefe	red level of involvement in treatment decision making	75
	4.2.	The relationship between coping style and information seeking	
	4.2.2	2 The relationship between coping style and prefered level of involvement in treatn	nent
	deci	sion making	77
	4.2.	B Distinguishing monitoring and blunting	78
	4.3	The relationship between coping style, intolerance of uncertainty, and distress	79
	4.4	Predictors of treatment choice	81
	4.5	Masculinity	84
	4.6	Subjective impressions	85
	4.7	Novel scholarly contributions	86
	4.8	Implications	87
	4.9	Limitations and conclusions	96
Re	efere	nces	127
Aj	open	lices	146
	Appe	ndix A- Time 1 questionnaires	146
	Appe	ndix B- Time 2 questionnaires	158

List of Tables

Table 1	Demographics
Table 2	Disease characteristics
Table 3	Stability of monitoring, blunting, and intolerance of uncertainty103
Table 4	Correlations between monitoring and blunting, anxiety and depression104
Table 5	Time 1 correlations of interest105
Table 6	Time 1 - time 2 correlations of interest106
Table 7	Correlations of independent variables of interest with change scores in anxiety and
depression	n
Table 8	Effect size of change in anxiety and depression over time108
Table 9	Hierarchical linerar regression investigating whether blunting predicts variance in
time 2 anx	
Table 10	Hierarchical linear regression predicting whether blunting predicts varianece in
time 2 dep	pression
Table 11	Hierarchical linear regression investigating whether blunting predicts additional
variance in	n information preferences (global measure) over and above monitoring
Table 12	Hierarchical linear regression investigating whether blunting predicts additional
variance in	n information preferences (count) over and above monitoring112
Table 13	Hierarchical linear regression investigating whether monitoring predicts varience
in control	preferences113
Table 14	Hierarchical linear regression investigating whether blunting predicts variance in
control pro	eferences114
Table 15	Hierarchical linear regression investigating whether IUS predicts variance in time
2 anxiety.	
Table 16	Hierarchical linear regression investigating whether IUS predicts variance in time
2 depressi	on116
Table 17	Hierarchical linear repgression predicting whether IUS with no overlap with
PSSCAN	predicts variance in time 2 depression117
Table 18	Hierarchical linear regression investigating whether IUS predicts variance in time
2 depressi	on over and above monitoring and blunitng

Table 19	Bianary logistic regression results for continuous variables of interest predicting	
treatment of	choice	
Table 20	Bianary logistic regression results for categorical variables of interest predicting	
treatment choice		
Table 21	Frequency of participants' treatment choices	
Table 22	Frequency of participants' endorsed preferred level of involvement in treatment	
decision making with their physician (ranging from relatively more active to relatively more		
passive)		

List of Figures

Figure 1	Study hypotheses	123
Figure 2	Anxiety and depression means	124
Figure 3	Proposed mediational model	125
Figure 4	Main findings	126

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1. Introduction

Prostate cancer is the second leading cause of mortality in men, and one in seven men will develop prostate cancer during his lifetime (American Cancer Society, 2007). As the population ages, increasing numbers of Canadians will be impacted by this disease. Active treatments for this condition are invasive and often associated with undesirable side effects. Active treatments are also associated with high costs to the health care system. Additionally, survival rates for men diagnosed with prostate cancer are very high, making quality of life issues an important area of research for this particular group. The current project aims to provide address clinical practice concerns based on empirical evidence, and provide information that would be useful in developing a screening package to help meet the psychosocial needs of men newly diagnosed with prostate cancer, as they make their treatment decision, and later on in their cancer trajectory.

1.1 Traditional treatment options

Traditional, active treatments common in early stage prostate cancer (often where the cancer is confined to the prostate gland) include radical prostatectomy, and radiation therapy. Prostatectomy involves surgical removal of the prostate gland and attached seminal vesicles, and sometimes nearby tissues where the cancer may have spread. Individuals undergoing a nerve sparing radical prostatectomy are more likely to have the nerves on either side of their prostate left intact compared to the non-nerve sparing procedure, which is no longer commonly practiced. Radiation therapy can either be in the form of external beam radiation, or brachytherapy. External beam radiation is given in brief sessions, usually one session each weekday, for several weeks. Brachytherapy involves implanting radioactive seeds directly into the prostate gland. The seeds remain in place for a person's life. The amount of time the seeds remain radioactive depends on the dose and type of radioactive material used.

Hormone therapy may also be used before, during or after prostatectomy or radiation therapy. The aim of hormone therapy is to decrease production of testosterone by the testicles or block the action of testosterone on cancer cells in the prostate. While hormone therapy cannot cure cancer, it can slow cancer growth and reduce tumor size. Hormone therapy can either take the form of administration of drugs through long-acting injections, or less commonly orchiectomy (removal of the testicles) (Canadian Prostate Cancer Network).

Younger, otherwise healthy individuals diagnosed with early stage disease have a variety of treatment options available to them (Peschel & Colberg, 2003). A review of quality of life studies on prostate cancer populations concludes that radical prostatectomy, external beam radiation therapy and brachytherapy all affect urinary and sexual domains of functioning. Although rates of side effects differ depending on treatment (Penson, Litwin, Aaronson, 2003; Templeton, 2003), when changes in quality of life over time are compared across treatments, few differences if any are reported (Fransson et al., 2001). Also, rates of disadvantageous side effects differ at different stages of disease progression (Penson & Litwin, 2003). Similar findings and trends across treatments have been reported for anxiety and depression (Steineck et al., 2002; Burnet et al., 2007).

Individuals undergoing radiation therapies can experience significant bowel dysfunction; this is uncommon following surgery (Bacon, Giovannucci, Testa, & Kawachi, 2001; Penson, Litwin, & Aaronson, 2003). Retrospective, cross-sectional study of participants treated for prostate cancer at a community medical center between the years of 1995-1999 indicates that external beam radiation therapy was associated with worse bowel function and greater bothersomeness compared to brachytherapy and radical prostatectomy.

Brachytherapy was associated with increased urinary irritation but this difference disappeared one year post treatment (Davis, Kuban, Lynch, & Schellammer, 2001).

In general, surgery is associated with higher rates of objective sexual dysfunction compared to other treatment types (Bacon, Giovannucci, Testa, & Kawachi, 2001; Davis, Kuban, Lynch, & Schellammer, 2001; Penson, Litwin, & Aaronson, 2003). However, participants rate their bother resulting from sexual dysfunction equally in all three groups (Penson, Litwin, Aaronson, 2003). The distinction between incidence of dysfunction and amount of bother is an important one in presenting treatment options to men. Cross sectional study also indicates that although prostatectomy was associated with greater urinary and sexual dysfunction compared to other treatment types, nerve sparing surgery and erectile aids were found to minimize differences in sexual function. Side effects as measured by American Urological Association Symptom Scores were found to be equal in treatment groups 12 months post surgery (Davis, Kuban, Lynch, & Schellammer, 2001).

There are also differences in the ways that certain dysfunctions can manifest. For example, urinary dysfunction following surgery often takes the form of stress urinary incontinence, while urinary dysfunction following radiation therapies is more related to irritative voiding symptoms (Penson, Litwin, & Aaronson, 2003).

Although differences are apparent in rates of side effects associated with different treatment types, not all these differences may be lasting. Study of 2306 men newly diagnosed with prostate cancer randomly selected from a population-based database finds that although specific side effects (including sexual function, sexual bother, urinary function, and urinary bother) are independently associated with worse general health-related quality of life, two years following treatment, primary treatment type was not associated with general health

related quality of life (Penson, et al., 2003). This finding, in addition to findings that in many cases treatment option is not associated with a compromise in survival (Klotz, 2008), highlights the fact that for relatively young, otherwise healthy men diagnosed with slow growing cancer, there is no single best treatment, and a treatment decision must be based on what the patient feels is personally most appropriate. The information that individual men require to most effectively make their treatment choice is an important part of the treatment decision making process.

Additionally, provision of information may have a more direct role in influencing side effects experienced by men following treatment. A randomized controlled trial grouped men who were recently treated for prostate cancer into a usual care control condition, a group education intervention, or a group education plus discussion intervention. Men in the group education plus discussion intervention were less bothered by sexual problems compared to the control group. For non-college graduates, the intervention conditions resulted in better physical functioning than the control conditions, and the group intervention plus discussion conditions. These group differences in physical functioning and positive health behaviors were not found among college graduates (Lepore, Helgeson, Eton, & Schulz, 2003), possibly indicating that college graduates were benefiting from their own independent information-gathering. This finding indicates there may be a continuing role for patient education in targeting side effects of treatment.

1.2 Active surveillance

It has been argued that the advent of prostate specific antigen (PSA) screening (a blood test that screens for PSA levels, which can reflect prostate cancer growth) has led to

the overtreatment of localized prostate cancer (Cooperberg, Moul & Carroll, 2005; Hardie et al., 2005). Active Surveillance (AS) is a relatively new treatment choice for localized prostate cancer that involves closely monitoring the cancer, and treating it aggressively only when is shows significant signs of growth. Active surveillance usually involves monitoring PSADT (PSA doubling time) and repeat biopsies (surgeries where small sections of the prostate are removed and examined for cancer presence and growth). Active surveillance is a distinct treatment option from watchful waiting, a treatment protocol that involves monitoring cancer growth leading to eventual palliative treatment. While watchful waiting has palliative intent, AS has curative intent (Hardie et al., 2005; Schroder, de Vries & Bangma, 2003). Accordingly, compared to AS, watchful waiting carries a higher mortality risk (Hodgson, Acher & Cahill, 2007). The judicious use of AS has the potential to avoid over treatment for low risk individuals, while assuring that those who are at, or are growing toward, higher risk receive aggressive treatment (Klotz, 2008).

Early results from longitudinal studies involving men on AS show promising cancer specific survival rates and deferred treatment maintenance rates (i.e., avoiding active treatments and their associated side-effects). Klotz (2006) conducted a study in which 299 participants with favorable risk indicators (PSA less than or equal to ten, Gleason Score -an indicator of disease severity- less than or equal to six; see D'Amico et al., 2004 for details regarding rationale of favorable indicators) who were treated with AS using PSADT monitoring and repeat biopsies. At eight years, 65% had not undergone any radical treatment, while the group's prostate cancer specific survival rate was 99.3%. Treatment maintenance rates in similar studies ranged from an encouraging 80% after a median of 22 months to a more conservative 41% after ten years (Carter et al., 2007; Khatami, Aus,

Damber, Lilja, Lodding, Hugosson, 2007; Panagiotou et al., 2004; Patel, DeConcini, Lopez-Corona, Ohori, Wheeler, Scardino, 2004; Van As, & Parker, 2007). The prostate cancer specific survival rate for AS compares favorably to a survival rate of 85.1% after 10 years for men choosing watchful waiting (Bill-Axelson et al., 2005).

Despite the noted survival rates of deferred treatment, there are some concerns about the viability of AS as a long-term management strategy. No longitudinal studies targeting active surveillance currently extend beyond 12 years and the issue of whether the failings of the watchful waiting treatment method also extend to the AS method beyond a 12-year period remains unresolved. One study involving 223 participants by Johansson et al. (2004) found a significant increase in prostate cancer mortality and metastasis after a 15-year period of watchful waiting, supporting early intervention for men with a long life expectancy. Another study (Parker, 2005) supports radical prostatectomy over watchful waiting by demonstrating lower overall mortality rate and lower risk of metastasis and tumor progression. However, in this study the author noted that the radical prostatectomy treatment did have significant consequences for sexual and urinary function.

Increasing uptake of AS would also result in significantly decreased costs to the health care system. Based on Medicare billing records from the United States, the costs per patient associated with active treatments for prostate cancer range from \$14,048 for radiation therapy to \$17,226 for radical prostatectomy. These estimates do not include costs incurred after the initial treatment interval and do not include losses to the economy because of missed work (Burkhardt et al., 2002). It is estimated that in total, \$1.7 billion dollars was spent on prostate cancer treatments in the United States in 1995 (Litwin et al, 1996). With increasing numbers of men being diagnosed with early stage cancer and choosing these treatments,

these costs will only increase. In addition to the increased uptake of active surveillance having potential benefit for men in terms of reductions in the associated side effects, there is also potential benefit in terms of reduced health care costs.

Research has identified several reasons that men are motivated to adopt active surveillance as a treatment strategy for their cancer. Chapple et al. (2002) found that choosing AS as a treatment option was motivated by concerns regarding side effects of treatment and treatment efficacy, as well as support from the physician for AS. Despite these benefits associated with AS, many participants chose traditional treatments. Empirical investigation has identified several barriers men face in choosing AS. The major barriers to participants' acceptance of AS appear to be anxiety (due to not choosing a potentially curative treatment immediately), uncertainty, and a lack of education and information prior to decision making (Pickles et al., 2007). Chapple et al. (2002) found that few men received sufficient information from physicians regarding AS and many men had to research this option themselves on the Internet. As research has also found that AS is often chosen in the face of considerable pressure from relatives and physicians to seek active treatment (Chapple et al., 2002), Chapple concludes that in order to increase uptake of AS, sufficient information regarding available options should be provided not only to participants, but also to the person's social support network. It seems that if information provision is an important factor in men's treatment choice, physician recommendation may be critical. Diefenbach et al. (2002) identified the recommendation of the physician as the most important factor influencing the treatment decision, followed by advice from family and friends, information from journals and books, and information from the Internet. Deferral to expert opinion bodes

ill for AS since specialists overwhelmingly favor the active treatment which they themselves provide (Fowler et al., 2000).

For men who are already on a program of active surveillance, several factors have been identified that motivate men to move to active treatment. These are not only limited to clinical considerations, but also include psychosocial factors. Clinical factors that influence physicians treating men on AS to recommend more radical treatment are related to cancer growth and include faster PSADT (less than or equal to two years), high Gleason scores on repeat biopsies, and metastasis indicators (Hodgson, Acher & Cahill, 2007; Khatami et al., 2007; Panagiotou et al., 2004). Other indicators of note are PSA density, PSA velocity and a higher initial PSA at diagnosis (Carter et al., 2007; Koppie, Gorssfeld & Miller, 2000; Meng et al., 2003; Latini et al., 2007). El-Geneidy et al. (2004) found younger age to be a significant predictor for choosing curative interventions, and this was despite the fact that nearly half of the individuals choosing a curative intervention did not show any indication of disease progression. El-Geneidy speculates that this may be due to the psychological toll of living with untreated cancer.

Research does support the assertion that anxiety is an important factor in men moving from AS to active treatments. Patel et al. (2004) followed 88 men on active surveillance over ten years and found that seven out of 31 men who eventually chose active intervention did so due to the anxiety created by the uncertainty of non-treatment. Even more convincingly, cancer-related anxiety change rate has been found to be a significant predictor for the decision to move to active treatment after being on active surveillance by Latini et al. (2007).

Although the available studies do indicate that anxiety is a factor in person's movement from active surveillance to active treatments, the body of research examining

quality of life concerns for men on active surveillance protocols is small. Because of the dearth of studies, predictions in this regard are largely based on findings involving watchful waiting. There appears to be a trend for a decrease in quality of life over time for those choosing watchful waiting (Arredondo et al., 2004; Bacon, Giovannucci, Testa & Kawachi, 2001; Steineck et al., 2002). Interestingly, Wallace (2003) found that this decrease was mediated by increases in uncertainty and danger appraisal. Taken together, these, and the above findings point to a role for anxiety in influencing men's movement from AS to active treatment; and may indicate that anxiety, uncertainty and danger appraisal would similarly influence initial treatment choices.

1.2.1 Active surveillance and uncertainty

There are many elements of receiving a cancer diagnosis that inherently involve uncertainty. There is uncertainty in the extent and spread of cancer growth, in prognosis, and in the risk of side effects associated with specific treatments. In the case of uptake of active surveillance, there is additional uncertainty inherent in the indefinite nature of the delay of active treatment. Despite the absence of significant differences reported in anxiety between treatments, most of the available research does indicate that delaying active treatment increases stress and uncertainty (Hedestig, Sandman & Widmark, 2003). This has led to the study of interventions designed to combat stress and uncertainty. These interventions involve patient and physician education, support groups, and approaches that give the patient a sense of control, for example, lifestyle changes (Pickles et al., 2007). Daubenmier et al. (2006) recruited 93 men on active surveillance and placed 44 on an intervention program that included a vegan diet, stress management and exercise. Those on the intervention program reported increased physical health-related quality of life and sexual function. Bailey et al. (2004) introduced an intervention to a sample of men diagnosed with prostate cancer that utilized cognitive reframing of illness experiences. These men showed greater quality of life, optimism about future quality of life, and less confusion than the control group. The presence of anxiety in patient populations not currently engaging in active treatments, and the success of these interventions in increasing indicators of psychological health, such as quality of life and optimism, suggests a possible benefit in exploring intolerance of uncertainty in these participants. Because AS treatment programs inherently involve tolerating significant amounts of uncertainty, participants low in intolerance of uncertainty may be more likely to choose active surveillance as a treatment option, and may better tolerate maintenance of an active surveillance program compared to participants high in intolerance of uncertainty.

1.3 Psychological distress

It is not unusual for men to experience some sadness related to their cancer diagnosis (Kunkel, Bakkerm, Myers, Oyesanmi & Gomella, 2000). However, research in this area shows that only a minority of men experience severe symptoms (Cliff, A.M. & Macdonaugh, R.P., 2000; Crawford, et al., 1997; Kunkel, Bakker, Myers, Oyesanmi, & Gomella, 2000; Roesch, et al., 2005; Sharpley, & Christie, 2007; Soloway, Soloway, Kim, & Kava, 2005). Based on clinical cut-off scores, estimates of depression and anxiety in men dignosed with prostate cancer, as measured by the Hospital Anxiety and Depression Scale, range between 13% and 38% (Bennett, & Badger, 2005). Rates of depression have been shown to be even lower in the case of early and localized cancers (Bisson, et al., 2002). Some research even reports a general lack of clinically significant anxiety and depression in men diagnosed with prostate cancer despite experiencing pain and fatigue (Zaza, Sellick, & Hillier, 2005). Variability in findings may be due to the difficulty differentiating neurovegetative symptoms

related to depression from those related to disease progression and treatment (Kunkel, Bakkerm Myers, Oyesanmi & Gomella, 2000), use of non standardized instruments in targeting psychological variables, or use of more widely accepted psychological measures combined with idiosyncratic cut-off scores denoting significant psychological distress. Another complicating factor in this area of research is that samples often combine participants undergoing a variety of different types of treatment, participants at varying stages of those different treatments (Van Andel, Visser, Hulshof, Horenblas, & Kurth, 2003), and participants at different stages of disease progression (Roth, et al., 1998). A further complication is that despite the fact that most studies suggest that it is a minority of person's with prostate cancer who experience sustained or significant depression and anxiety, qualitative study identifies anxiety as one of the main themes talked about by men with prostate cancer following their diagnosis (Gray, Fitch, Phillips, Labrecque & Klotz, 1999). Many men diagnosed with prostate cancer report experiencing disease-specific anxiety, especially surrounding results of diagnostic tests and treatment choice (Kunkel, Bakkerm Myers, Oyesanmi & Gomella, 2000). This discrepancy between quantitative and qualitative findings may indicate that the varying rates of psychological distress found in prostate cancer populations via quantitative research may in part reflect the varying sensitivity of the measures that are used to target these variables in general, and a lack of sensitivity in detecting distress as it is experienced and expressed specifically by men.

Despite inconsistency in the literature regarding rates of psychological distress in men diagnosed with prostate cancer, clinically significant depression and anxiety, and decreases in health related quality of life do occur in a significant minority of this population (Eton, & Lepore, 2002; Bisson, Chubb, Bennett, Mason, Jones, & Kynaston, 2002).

Importantly, when distress is present, it tends to be persistent. Research identifies relatively greater decreases in health related quality of life persisting at three months past prostate cancer diagnosis in men, compared to men with benign prostate hyperplasia (Visser et al., 2003). Depression and anxiety when identified at the time of prostate cancer diagnosis predicts depression and anxiety at follow-up (Nordin, Berglund, Glimelius, & Sjoeden, 2001). Additionally, correlational research indicates that suicide among men with prostate cancer occurs at a rate 4.24 times higher than their age matched peers (Llorente et al., 2005).

Although research does indicate that when distress is experienced, this distress persists over time (Visser et al., 2003; Nordin, Berglund, Glimelius, & Sjoeden, 2001), there is limited knowledge regarding the specific time course of distress, and also little is known about any differences in the time course of distress indices such as depression and anxiety in newly diagnosed prostate cancer populations. In general, it is true that measures of depression and anxiety tend to be significantly correlated (Bjelland, Dahl, Haug, & Neckelmann, 2002). However, available research also suggests that anxiety and depressive symptoms, when present, change differentially over time (Merikangas, Zhang, Avenevoli, Acharyya, Neuenschwander, & Angst, 2003). Findings indicate that non pathological levels of anxiety tend to be more reactive to specific stressors, and may decrease over time and with distance from the stressor. Depression, on the other hand, when present, tends to endure with time. The longitudinal nature of the current project allows investigation into this area.

Research has identified several specific concerns that may be related to men's experience of psychological distress. Areas of concern surrounding cancer diagnosis and treatment that men identify as relevant include concerns related to sexuality, relationships, and masculinity (Bokhour, Clark, Inui, Sillman, & Talcott, 2001). Psychological issues

related to long-term cancer survivorship, for example uncertainty and worry related to cancer growth, have also been identified as a major area of concern for men. In addition, physicians underestimate the subjective impact of treatment-related side effects (Kunkel, Bakkerm Myers, Oyesanmi & Gomella, 2000). Physicians may be communicating these predictions to their patients, and in doing so may be influencing men's expectations for the bothersomness of potential side effects. The resulting discrepancy between actual and anticipated bothersomeness of side effects may increase men's distress, such that unexpected bothersome side effects are more distressing than expected ones. Supporting this hypothesis, men's expectations of side effects of active treatment have been linked to decrease in quality of life (Kunkel, Bakkerm Myers, Oyesanmi & Gomella, 2000). Additionally, a study of men with low risk prostate cancer finds that premorbid factors and disease status is not predictive of men's psychological distress (Bisson, Chubb, Bennett, Mason, Jones, & Kynaston, 2002). The presence of significant distress in a sizable minority of men diagnosed with prostate cancer, and the lack of association between distress and disease characteristics, points to a possible role for other psychological factors in the onset or maintenance of distress. Two possible factors are disease-specific coping style, and intolerance of uncertainty. Research must work to develop screening guidelines that target relevant psychological variables that indicate risk for significant mental health difficulties in men.

In summary, the high survival rate of men diagnosed with prostate cancer, the variety of different treatments available for this disease, the high costs to the health care system associated with traditional active treatments, as well as the variability in men's psychological response to treatment and diagnosis are factors that underline the importance of developing efficient screening protocols in order to comprehensively address the diverse needs of this

growing population. There may be a role for coping style and intolerance of uncertainty in identifying men at greater risk of developing significant psychological distress when faced with a diagnosis of prostate cancer.

1.4 Predictors: monitoring, blunting, and intolerance of uncertainty

The literature on coping is vast and characterized by confusing and at times inadequate definitions (Skinner, Edge, Altman, & Sherwood, 2003). Coping is broadly defined as a person's constantly changing efforts to manage demands that are appraised as taxing (Folkman, Lazarus, Drunkel-Schetter, DeLongis, & Gruen, 1986). Much coping research stems from the work of Lazarus and Folkman, who suggest that coping is strongly related to cognitive appraisal during acute exposure to a stressor (Folkman, Lazarus, Drunkel-Schetter, DeLongis, & Gruen, 1986). These researchers outline two kinds of appraisal processes: primary and secondary appraisal. Primary appraisal, or the cognitive process through which an event is evaluated with respect to potential gains and losses, is usually involved in problem-focused coping and consists of assessing what is at stake in the coping encounter and altering the person or environment that is causing distress. Secondary appraisal is involved in emotion-focused coping and consists of the cognitive process through which an event is evaluated with respect to what coping resources are available. Problemfocused coping is defined as the cognitive and behavioral efforts to manage the personenvironment relationship that is the source of stress, and emotion-focused coping is defined as the cognitive and behavioral efforts to regulate stressful emotions.

According to this model, the forms of coping used will vary depending on the specifics of the situation that necessitates coping, and individuals may use several forms of problem and emotion focused coping at various stages of a stressful encounter (Lazarus &

Folkman, 1985). Stressful events can be thought of as having three stages, an anticipation stage, a waiting stage (before the outcome is known) and an outcome stage, where ambiguity of the situation decreases over time. Sensibly, problem focused coping is used more often when a specific situation is appraised as changeable, while emotion focused coping is used more often when a situation in appraised as unchangeable (Lazarus & Folkman, 1985).

Lazarus and Folkman (1985) emphasize that a stressful encounter should be viewed as a dynamic process and not a static event, and that a coping preference in a specific situation should not be interpreted as a pervasive personality trait. Along these lines, receiving a diagnosis of prostate cancer and having to make a treatment decision is not a unitary stressful phenomenon, but instead may be better conceptualized as consisting of multiple stressors, each of which may necessitate engagement of situation-specific coping processes. As mentioned earlier, there is stress and uncertainty surrounding treatment decisions and outcomes of active treatment and active surveillance, both in terms of the treatment's direct impact on the cancer, as well as in terms of potential unpleasant side effects of treatments. Men's coping processes will be influenced by their appraisal of factors influencing their diagnosis and treatment. Such factors may include men's confidence in whether the cancer is 'curable', in their physicians, and in the available treatment. Other factors subject to appraisal may be how well men think they would physically and psychologically tolerate different types of treatments. Men may also differ in their appraisals of the relative threat of these different stressful aspects of cancer diagnosis and treatment. For some men, undergoing a surgery may be relatively more stressful, while for others the potential experience of sexual and urinary side effects following surgery may pose a greater threat. For others still, the uncertainty associated with engaging in a monitoring treatment

option such as active surveillance may be most threatening. The multitude of ways a man may interpret and appraise the threats associated with receiving a cancer diagnosis and making a treatment decision points to the necessity of an individualized approach in meeting the health care needs of these men.

According to Lazarus and Folkman (1985) emotions and appraisals follow one another. Specifically, emotions can result from how individuals appraise their ongoing interactions with the environment, or how they appraise a stressful situation, where individual differences in emotion experienced in relation to a stressful encounter reflect differences in cognitive appraisal and coping. Extending this principle, distress that men may experience during their diagnosis and treatment decision is likely influenced by their coping strategy, and related coping style. As mentioned earlier, a significant minority of men experience clinically significant distress in relation to their cancer diagnosis (Cliff, A.M. & Macdonaugh, R.P., 2000; Crawford, et al., 1997; Kunkel, Bakker, Myers, Oyesanmi, & Gomella, 2000; Roesch, et al., 2005; Sharpley, & Christie, 2007; Soloway, Soloway, Kim, & Kava, 2005). Information about coping style may also help identify and meet the emotional needs of these men.

By and large, coping research takes a state, as opposed to trait, oriented approach to coping (Folkman & Lazarus, 1980), where individuals' coping styles are examined in specific situations, as opposed to inferring all coping from a trait measure. There is also a focus on contextual variables that influence the coping process. Despite this, substantial individual differences are found in terms of coping processes used at different points in a stressful encounter (Lazarus & Folkman, 1985), and certain types of coping have been found to be generally more common in certain types of situations. For example, problem-focused

coping is relatively more common in work situations while emotion-focused coping is relatively more common in chronic disease contexts (Folkman & Lazarus, 1980). Trends relating to gender have also been found, where men use more problem focused coping compared to women in work situations, situations appraised as unchangeable and having to be accepted, or in situations where men feel more information is required. No gender differences are found in emotion-focused coping (Folkman & Lazarus, 1980).

While it is undisputed that idiosyncratic characteristics of the coping situation influence choice of coping strategies that are used across situations, there is also evidence of trends such that individual's coping even in varying situations may share some similar characteristics (Miller, 1980; 1981). Much of the research showing that trait measures of coping have poor predictive validity has focused on the huge variability of daily stressors. There is evidence to suggest that trait-like coping measures have some predictive utility in situations with more limited variability, such as coping with medical threats (Miller 1987, 1988, 1995; van Zuuren et al., 1991; van Zuuren et al., 1994).

For the purposes of the current project, a trait, as opposed to a state, approach is taken. Selecting a treatment approach entails contending with a number of stressors, and presumably, associated emotional responses. Although the main decision men have to make is how much information they want and how much uncertainty they are comfortable tolerating, due to the above-mentioned factors, this decision is difficult. Information about men's psychological coping style, that shows some stability across similar situations (e.g. situations related to prostate cancer diagnosis and treatment decision-making), may be useful in clinically convenient informing screening packages that are designed to help meet men's psychosocial needs related to their diagnosis.

Aside from the popular Folkman and Lazarus model, another theory on how individuals cope with threatening situations asserts that there are two basic modes of coping: [1] 'repression' or 'cognitive avoidance', defined as an orientation away from threatening situations, and 'sensitization' or 'vigilance', or [2] an orientation toward threat, and toward information-seeking (Byrne, 1964); these constructs are seen as trait-like. The current study was based on a theoretical model that classifies cognitive and emotional coping as characterized by either an approach or an avoidance style. The terms 'monitoring' and 'blunting' have been used widely in the literature to describe cognitive scanning (or attending to threatening information) and cognitive avoidance of threatening information, respectively (Miller, 1980; 1981). Much work in this area has been conducted using the Miller Behavioral Style Scale (MBSS; Miller, 1987).

It has also been proposed that a cognitive schema characterized by intolerance of uncertainty may underlie a monitoring coping style (Rosen, Knauper, & Sammut, 2007). Intolerance of uncertainty is commonly assessed using the Intolerance of Uncertainty Scale (IUS; Buhr & Dugas, 2002).

Possible relationships between monitoring and blunting, and intolerance of uncertainty, to other study variables, as well as relevant validity research on the MBSS and IUS are described below.

1.5 Coping and outcomes: information seeking, psychological distress, and treatment decision making

For some men, information about their cancer may aid in coping, reduce distress, and increase satisfaction with care. Provision of information is also a necessary prerequisite for informed consent in treatment decision making. However, the amount, detail, type and mode of delivery of information can vary. Qualitative and small-scale studies suggest that an individualized approach to providing information is optimal (Davison, Degner, & Morgan, 1995; Davison, Gleave, Goldenberg, Degner, Hoffart, & Berkowitz, 2002; Wong, Stewart, Dancey, et al., 2000; Davison, & Degner, 1997). Providing individualized information to men newly diagnosed with prostate cancer has been shown to reduce psychological distress and increase decisional control (the amount of control men wish to have in making their treatment decision with their physician) in these men (Davison, Goldenberg, Gleave, & Degner, 2003). It may be that individual differences in coping can have an impact on how information is received, and thus affect psychological distress experienced by men.

1.5.1 Monitoring and information seeking

Conventional medical wisdom and cautiousness in ensuring informed consent suggests that men should be provided with as much information as possible concerning their diagnosis, and that all men benefit equally from a similar amount of information. However, research shows considerable inter-individual variability in information needs (Echlin & Rees, 2002).

Areas of information need identified as particularly important by men with localized prostate cancer (who can choose between aggressive or active surveillance approaches to treatment) include information concerning the long-term course of disease, and sexual side effects of treatment (Boberg, et al., 2003; Cassileth, Zupkis, Sutton-Smith, & March, 1980; Echlin & Rees, 2002). This is especially true at the time of diagnosis and initial treatment decision making (Boberg, et al., 2003). Following diagnosis, many men enter a period of intensive information seeking. Some men find this helpful, while others find it overwhelming. This inter-individual variability in emotional response to information is

consistent with the monitoring-blunting hypothesis (Echlin & Rees, 2002). Further, individual differences in coping with stressful situations, as captured by the MBSS, are related to information seeking strategies (i.e. demands and informational preferences). Research shows that when faced with a stressful situation individuals with a monitoring coping style seek a relatively larger amount of information, while low monitors and those with a blunting coping style seek less information (Miller 1987, 1988, 1995; van Zuuren et al., 1991, 1994).

Research on men diagnosed with prostate cancer who participate in support groups has shown that members are less satisfied with the information provided by medical professionals compared to men who do not attend support groups. Individuals who attend support groups also engage in less avoidance coping compared to non-members (Voerman, et al., 2006). Lack of satisfaction with information provided by health care professionals, and approach coping are two characteristics of monitors (Miller, 1980; 1995). The high proportion of individuals in support groups who are dissatisfied with information provided by medical professionals and who less often utilize an avoidance coping style may be an *in vivo* example of the increased information seeking strategies of monitors.

1.5.2 Monitoring and distress

A monitoring coping style itself is related to the experience of distress. Research shows that monitors show elevated intrusive ideation in response to long-term medical threats (Miller, et al., 1996), and have relatively greater attention to general internal bodily cues. This can lead to increased experience of nausea following chemotherapy (Gard, Edwards, Harris, & McCormack, 1988; Miller, 1995; Lerman, et al., 1990). The distress experienced by high monitors may even increase over time despite psychological intervention (Lerman et al., 1996; Petersson et al., 2002).

1.5.3 Monitoring, information seeking, and distress

There is a potential benefit in terms of reduced distress experienced by men when the breadth and depth of information provided to them is tailored to correspond to individual preferences and monitoring coping style. As well, there is a possible psychological benefit in providing monitors with additional informational resources. Work shows that in general monitors will suffer less stress when they are more informed (Miller, 1995; Miller, Brody & Summerton, 1988). As well, in medical contexts, high monitors seek relatively more information (in comparison to low monitors) and also cope better when this information is provided (compared to when it is not) (Peterson, et al., 2002). Conversely, low monitors provided with high levels of information show significantly more anxiety, depression, and physical arousal compared to low monitors not supplied with such information (Miller & Mangan, 1983; Petersson et al, 2002). In this way, although monitoring coping style may be a risk factor for distress, this risk may be diminished when individuals with a monitoring coping style are provided with the information they want.

1.5.4 Treatment decision making

Increased availability and screening for prostate cancer has resulted in larger numbers of men being diagnosed at a younger age and with earlier stages of disease. Although various complicating factors can limit treatment options (e.g. men's general health and availability of different treatments in different locations, for example larger city centers versus community clinics), in the majority of cases of early stage prostate cancer numerous treatment options are available, and decisions must be made. Medical decision making often involves a cost benefit analysis of multiple treatment options, where costs and benefits may vary for each patient. Physicians invariably have critical input into this decision (Diefenbach, 2002), and physicians are more likely to recommend treatments corresponding to their own medical specialty (Diefenbach, 2002; Fowler, 2000), a fact that not all men are aware of or fully appreciate in their personal decision making. Despite this, individual's preferred level of involvement in treatment decision making, and preferred treatment, may vary.

1.5.5 Monitoring and preferred level of involvement in treatment decision making

Research shows there is inter-individual variability in men's preferred level of involvement in treatment decision making (Cassileth, Zupkis, Sutton-Smith, & March, 1980). It is also the case that men with prostate cancer who are more active in seeking information about their diagnosis and treatment options also prefer to play a more active role in the actual treatment decision (Davison, Gleave, Goldenberg, Degner, Hoffart, & Berkowitz, 2002). This may be because individual differences in coping style underlie both of these factors. As well, study of factors facilitating empowerment, or belief in self-efficacy, in men newly diagnosed with prostate cancer, has shown that men who are assisted in gathering information related to treatment options assume a significantly more active role in medical treatment decision making compared to control groups, and those men who portrayed a more active role in medical decision making by way of information assistance, showed a reduction in anxiety at follow up (Davison & Degner, 1997). This suggests that for certain men, provision of wanted information impacts level of involvement in treatment decision making as well as psychological well being.

Work in other populations shows that monitoring is correlated with level of participation in medical decision making. Although a minority of work has shown that high

monitors in a primary care setting prefer a less active role in treatment decision making (Miller, Brody, & Summerton, 1988), generally, high monitors demonstrate greater involvement in medical decision making, while low monitors assume a more passive role (Miller, Brody, & Summerton, 1988; Ong et al., 1999). These different styles may be attributed to differential uncertainty reduction strategies employed by monitors in different settings. Importantly, when given more responsibility in the management of their condition, high monitors respond with more adherence to their physician's recommendations (Miller, 1995), indicating a clear benefit of matching level of involvement in the management of their condition.

1.6 Interim summary

Findings show that participants' use of particular coping strategies provides insight into their information preferences concerning their diagnosis, and for assuming particular roles in medical treatment decision making. These factors may also be related to participants' experiences of depression and anxiety surrounding diagnosis and treatment such that distress risk is reduced when information provision matches preferences and coping style. Depression and anxiety may change differentially over time. In this way, information about a person's coping style may assist health care professionals in tailoring interventions not only to the medical needs of men diagnosed with prostate cancer, but to men's informational and psychological needs as well; and thus to minimize psychological distress experienced by men. The Miller Behavioral Style Scale, a self-report tool targeting monitoring and blunting, may be a useful screening tool in identifying the unique needs of individuals.

1.7 Intolerance of uncertainty

Individuals vary in their ability to tolerate uncertainty (Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994). Buhr and Dugas (2002) define intolerance of uncertainty as "the excessive tendency of an individual to consider it unacceptable that a negative event may occur, however small the probability of its occurrence" (Buhr & Dugas, 2002, p.932). According to this definition, intolerance of uncertainty is not necessarily tied to the actual risk associated with the uncertain situation. So, one individual may view a particular uncertain situation as aversive while another individual may better tolerate the same situation. Intolerance of uncertainty is often measured with the intolerance of uncertainty scale. In understanding intolerance of uncertainty, it may be helpful to distinguish it from worry, perceived threat, cognitive vigilance, and monitoring coping style.

1.7.1 Intolerance of uncertainty and worry

Intolerance of uncertainty and worry are conceptually distinct (Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994; Ladouceur, Talbot, & Dugas, 1997). Worry is a mental act characterized by feelings of anxiety surrounding possible negative future events, while individuals with high levels of intolerance of uncertainty are predisposed to view uncertainty itself as unacceptable. Researchers conceptualize the construct of intolerance of uncertainty as the manifestation of a dysfunctional schema that may contribute to the development and maintenance of worry. When faced with an uncertain situation, worry may directly result when an individual with high intolerance of uncertainty engages in biased processing leading to overestimations of threat and faulty coping efforts, or indirectly through negative mood resulting from biased processing (Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994). Research on a non-clinical, undergraduate sample supports the assertion that levels of intolerance of uncertainty are related to biases in information processing, and that these biases may partially explain the link of intolerance of uncertainty to worry. In a word recall task, participants high in intolerance of uncertainty recalled a higher proportion of words denoting uncertainty, and were more likely to interpret ambiguous situations as threatening (Dugas, Hedayati, Karavidas, Buhr, Francis, & Phillips, 2005). As well, the tendency to make threatening interpretations was more strongly related to intolerance of uncertainty than worry, anxiety, or depression (Dugas, et al., 2005).

The conceptual distinction between worry and intolerance of uncertainty is supported by research (Buhr & Dugas, 2002; Ladouceur, Talbot, & Dugas, 1997). While intolerance of uncertainty does predict a significant amount of variance in worry, beyond demographic variables, mood (Buhr & Dugas, 2002), and negative affect (Freeston, Rheaume, Letarte, Dugas & Ladouceur, 1994), correlational research also indicates that scores on the IUS show a unique positive relationship with scores on the Penn State Worry Questionnaire that goes beyond correlations with measures of negative affect, including anxiety (measured with the Beck Anxiety Inventory) and depression (measured with the Beck Depression Inventory–II). Scores on the IUS differentiated participants who met criteria for Generalized Anxiety Disorder (GAD), participants who met only the somatic criteria for GAD, and participants who did not meet criteria (Buhr & Dugas, 2002). Further, supporting the assertion that intolerance of uncertainty and worry are distinct but related variables, in a study sample of Dutch undergraduate students, intolerance of uncertainty made a unique and independent contribution to trait worry apart from meta-worry processes (i.e. worrying about worrying)
and trait neuroticism. Intolerance of uncertainty was also found to be a partial mediator in the relationship between neuroticism and trait worry (de Bruin, Rassin, & Muris, 2007).

Intolerance of uncertainty may be a higher order construct that leads to worry (Ladouceur, Talbot, & Dugas, 1997). Evidence supporting this assertion comes from studies of clinical and non-clinical populations, and studies using a variety of methodologies. Although scores on the IUS were found to be related the scores on the Intolerance of Ambiguity Scale (r=0.42), measures of perfectionism and measures of perceived control, the IUS still predicted a significant amount of variance in worry after these measures were taken into account (Buhr & Dugas, 2006). A study involving an experimental manipulation of intolerance of uncertainty showed that an induced increase in intolerance of uncertainty led to an increase in worry (Ladouceur, Gosselin, & Dugas, 2000). Along these lines, participants who scored high on a questionnaire measuring the criteria for generalized anxiety disorder (GAD) (a disorder where worry is a central symptom), scored significantly higher on the IUS compared to study participants without elevated scores on a GAD questionnaire (Buhr & Dugas, 2002). This result is consistent with results from populations with clinically significant levels of worry, where intervention targeting intolerance of uncertainty has also been found to be effective in reducing worry in individuals with generalized anxiety disorder; with changes in intolerance of uncertainty predicting changes in worry (Dugas & Ladouceur, 2000). Intolerance of uncertainty has also been shown to be a unique predictor for the severity of generalized anxiety disorder, after other cognitive variables commonly included in models of generalized anxiety disorder were taken into account (Dugas et al., 2007).

Research comparing levels of intolerance of uncertainty in younger and older adults provides evidence that intolerance of uncertainty may have a role in the maintenance of worry. Retrospective research with older adults, and cross sectional research comparing younger adults (range from 19-37 years) to older adults (65 years and older) indicates an age related reduction in the tendency to worry (Basevitz, Pushkar, Chaikelson, Conway, & Dalton, 2008). This well-established finding in research on older adults may be driven by age-related reductions in intolerance of uncertainty. In fact, older adults report less intolerance of uncertainty compared to younger adults, and age-related differences in trait worry are no longer significant once age-based differences in beliefs about worry and intolerance of uncertainty are statistically accounted for (Basevitz, Pushkar, Chaikelson, Conway, & Dalton, 2008).

1.7.2 Intolerance of uncertainty and perceived threat

The construct of intolerance for uncertainty is also distinct from perceived threat. A recent study on a sample of college students examined the distinctions between intolerance of uncertainty and threat. Intolerance of uncertainty is characterized by two stable dimensions: desire for predictability and uncertainty paralysis. This is conceptually distinct from perceived threat, which is characterized by perception of the probabilities and costs of future undesirable outcomes (Bredemeier, & Berenbaum, 2008). The study finds that the two dimensions of intolerance of uncertainty are differentially associated with perceived threat. Uncertainty paralysis is positively associated with both probability and cost estimates. Desire for predictability is positively associated with cost estimates, but negatively associated with probability estimates for low base rate negative outcomes, and not negative outcomes in general (Bredemeier, & Berenbaum, 2008). Intolerance of uncertainty, as well as the two

subscales of the intolerance of uncertainty scale, are positively associated with cost estimates of negative outcomes. Perceived threat was also found to partially mediate the relationship between intolerance of uncertainty and worry (Bredemeier, & Berenbaum, 2008). These results support the discriminant validity of the IUS subscales as well as the distinction between intolerance of uncertainty, perceived threat, and worry.

1.7.3 Intolerance of uncertainty, cognitive vigilance, and monitoring

Intolerance of uncertainty is also related to, but distinct from cognitive vigilance and monitoring. Both intolerance of uncertainty and monitoring are conceptually related to dispositional cognitive avoidance and cognitive vigilance. Avoidance is characterized by turning attention away from and inhibiting further processing of cues associated with threat, and vigilance is characterized by the increased intake and exhaustive processing of threatening information (Hock, Krohen, & Kaiser, 1996). Vigilance and avoidance are conceptualized as independent constructs underlying habitual coping styles. In this way vigilant and avoidant styles of coping with threat have substantial conceptual overlap with monitoring and blunting. In fact, like monitors, vigilant individuals have an orientation toward information seeking even when that information is threatening (Hock, Krohen, & Kaiser, 1996), such as in the case of a cancer diagnosis.

Some evidence suggests that the memory and perceptual processes of vigilant individuals reflect this bias toward processing threatening information. When presented with ambiguous sentences that could be interpreted as threatening or not, vigilant people have a bias toward interpreting those sentences as threatening, and more easily recognize threatening rather than non threatening variants of ambiguous sentences. Study results indicate that vigilant individuals' bias toward processing threatening information occurs at

the expense of processing non-threatening information. Interestingly, vigilant individuals also rated ambiguous stimuli as comparatively more unpleasant.

Although vigilance and avoidance map closely onto monitoring and blunting, these constructs are distinct from intolerance of uncertainty. According to Hock and colleagues (1996) dispositional avoidance and vigilance are related to the extent to which individuals tolerate uncertainty in threatening situations, where the behavior of vigilant individuals in threatening situations is predominantly motivated by the desire to reduce uncertainty, and characterized behaviorally by uncertainty-reduction strategies. The authors suggest that based on vigilance literature, we would expect individuals with a lower tolerance of uncertainty to be more likely to interpret an ambiguous situation as threatening, to be oriented toward those threats, and have better memory for threatening stimuli associated with those situations. By the same token, perhaps the information seeking behaviors that characterize monitors are motivated by intolerance of uncertainty.

1.8 Intolerance of uncertainty and outcomes: information seeking and psychological distress

1.8.1 Intolerance of uncertainty and information seeking

Past research has established a relationship between intolerance of uncertainty and information seeking such that intolerance of uncertainty, like monitoring, may increase information seeking (Rosen, Knauper, & Sammut, 2007). In a sample of 147 female university students it was found that higher intolerance of uncertainty was associated with higher monitoring-type health behaviors. These health behaviors were reported information seeking intentions (five questions about information seeking and behavioral intentions related to the human papillomavirus (HPV) and HPV screening). The authors went on to

experimentally manipulate levels of intolerance of uncertainty in participants and found that inducing high intolerance of uncertainty is also associated with greater monitoring-type health behavior scores (i.e. reported information seeking intentions) (Rosen, Knauper, & Sammut, 2007). Interestingly, the relationship between intolerance of uncertainty and information seeking intentions was not mediated by wanting specific information about the health threat, suggesting that the association between intolerance of uncertainty and information seeking is relatively free from situational constraints. As well as supporting the assertion that monitoring-type health behaviors and intolerance of uncertainty are relatively stable coping styles that are somewhat unaffected by information wants specific to contextual and situational factors, this finding suggests that information seeking associated with monitoring coping style may at least in part be motivated by intolerance of uncertainty.

Additional research has also linked elevated levels of intolerance of uncertainty to relatively higher information seeking intentions (Rosen, Knauper, Di Dio, Morrison, Tabing, Feldstain, Amsel, Mayrand, Franco, & Rosberger, 2010; Ladouceur, Talbot, & Dugas, 1997). Mailed questionnaires had been used to evaluate the impact of an information intervention (an information pamphlet) about HPV on information seeking intentions and anxiety in women. Women with higher intolerance of uncertainty had higher information seeking intentions. Also, investigations of intolerance of uncertainty in a non-clinical population has found that for moderately ambiguous tasks (but not highly ambiguous or unambiguous tasks, regardless of the degree of task difficulty) individuals with a high intolerance of uncertainty had difficulty making decisions, and required more information before making a decision (Ladouceur, Talbot, & Dugas, 1997). Intolerance of uncertainty has also been linked to increased information seeking when faced with an ambiguous task in a non-clinical sample

with elevated levels of obsessive compulsive personality disorder (OCPD) traits (Gallagher, South, & Oltmanns, 2003) and in a sample with generalized anxiety disorder symptoms (Ladouceur, Talbot, & Dugas, 1997). Interestingly, individuals with OCPD traits have been found to score higher on the monitoring subscale of the Miller Behavioral Styles Scale, while no such relationship was found for individuals with avoidant personality disorder traits (Gallagher, South, & Oltmanns, 2003). These results support the notion that increased information seeking may play a role in GAD and OCPD, two disorders where intolerance of uncertainty has been proposed as an important construct. A similar relationship between intolerance of uncertainty and information seeking may exist in men newly diagnosed prostate cancer.

1.8.2 Intolerance of uncertainty and distress

Some work has investigated intolerance of uncertainty and distress in medical contexts. Similarly to monitoring, high levels of intolerance of uncertainty have also been linked to psychological distress. Of women who were at risk for contracting HPV and received a long HPV-related information intervention (instead of a short, or control information intervention), those with higher intolerance of uncertainty were more anxious than those with lower intolerance of uncertainty (Rosen et al. 2010). Although it seems counterintuitive that being more intolerant of uncertainty and receiving relatively more information leads to experiencing relatively more anxiety, this may be because the information provided could not resolve factual uncertainties about HPV. That is, despite receiving more information, women who are highly intolerant of uncertainty may also be at risk for experiencing higher anxiety, if the content of information provided does not fulfill their specific information needs (Rosen et al., 2010). Similarly, intolerance of uncertainty

was examined in a study investigating distress experienced by women who received uninformative test results for genetic testing related to breast cancer. The researchers found that greater intolerance of uncertainty predicted greater distress (general, cancer-related, and testing-related distress) for people receiving uninformative test results after one month, and greater general distress after six months (O'Neill et al., 2006). This suggests that intolerance of uncertainty may be an important variable in predicting distress in individuals at risk for cancer.

1.9 Contextualizing monitoring, blunting, and intolerance of uncertainty

It may tempting to conceptualize monitoring (or blunting) coping style, and their behavioral correlate of information seeking, as inherently good or bad; either as protective factors or risk factors. However, it may be more useful to qualify and contextualize these variables in terms of how extreme they are, and their relationships to the time course of a particular threat. For example, it may be that varying degrees of monitoring or blunting (and associated information seeking patterns) may be differentially beneficial at different points in coping with a medical threat such as diagnosis with prostate cancer. For example, during the initial stages of coping with a threat, the avoidance of threat related stimuli associated with a relatively high blunting coping style may serve a protective function for individuals who find this information emotionally overwhelming. However, this benefit may decrease over time as a person with this coping style may not gain access to informational supports that may be helpful to them. Conversely, for high monitors an initial phase of intense information seeking may result in increased satisfaction and decreased uncertainty. However, depending on the particular uncertainties that a person wishes to resolve, prolonged information seeking, especially in cases where no information is available to satisfy uncertainties, may only serve

to increase frustration and uncertainty. For example, an individual scoring high on blunting may initially be protected from being overwhelmed and feel less distressed because they avoid information related to their treatment options. However, if prolonged, eventually this avoidance may delay their treatment decision, or may mean they are less prepared when they need to make a treatment decision, resulting in increased distress at four months following their diagnosis (at the time a treatment decision must be made). In the case of high monitors, they may initially have increased satisfaction when they seek, and are provided with, a lot of information. However, if individuals continue to seek information beyond the point where it is productive (e.g. continuing to seek information related to different treatment options after a treatment decision has been made) this may become overwhelming or lead to dissatisfaction with treatment choice.

An analogy can be made to generalized anxiety disorder (GAD), where symptoms can manifest in an extreme example of either of the above cases. As mentioned above, intolerance of uncertainty has been implicated in the maintenance of generalized anxiety disorder. In the context of GAD, IUS can lead to pathological procrastination or avoidance of threatening uncertain stimuli, and to impulsive decision making, also in an effort to avoid uncertainties (Dugas & Robichaud, 2007). For example, a person with pathologically high intolerance of uncertainty may avoid making even small decisions, like buying a birthday gift so as to delay the possibility that they may not make the best choice. Contrastingly, high intolerance of uncertainty may also lead a person to impulsively make a decision to buy the first gift they see in order to avoid tolerating the uncertainty of having not yet chosen a gift. This procrastination maps roughly onto the blunting construct, and the approach behavior of the impulsive person maps roughly onto the monitoring concept. In contrast to the above

example, making a decision about cancer treatment is not a small one, and experiencing some distress in that situation is not necessarily an indication of a psychological pathology. However, although the example is more extreme, the underlying process operating at the time of prostate cancer diagnosis and treatment decision-making may be similar.

This has implications for the clinical realm. As to when screening for cancer patients' psychosocial needs occurs, it usually occurs only once, at the start of cancer care. The nonimmediate needs, or delayed distress of individuals may not be identified at this stage. From a clinical perspective, because coping styles are assumed to be relatively stable, if coping styles have systematic relationships to individuals' psychological outcomes at specific time points of the cancer trajectory, there would be a benefit in screening for these variables when men initially enter the cancer care system. Namely, information about coping style would not only help identify men's immediate needs, or men who are at immediate risk for experiencing distress, but coping style would also provide information about men's needs at a later time point.

1.10 Summary and hypotheses

Men newly diagnosed with low risk prostate cancer generally have multiple treatment options available to them, and treatment decision making can be difficult for men because each treatment presents with its own problems: significant side effects affecting quality of life or a need to tolerate uncertainty for a long time. How they make this decision, and which treatment men choose may be influenced by psychological characteristics. The motivation for, and design of, the current study was informed by clinical practice. The hope is that the current study will provide clinicians with practical information that will aid in the provision of holistic patient care that is inclusive of men's psychological as well as medical needs.

The primary objective of this study is to provide knowledge that could inform the creation of a psychological screening protocol that will aid clinicians in meeting the idiosyncratic needs of men newly diagnosed with prostate cancer. The aim of this screening package is to identify patient needs related to the amount of information that will aid in making a treatment decision, and to identify men's preferred level of involvement in treatment decision making. This package would also identify men at increased risk for experiencing (sustained) distress related to their diagnosis. Men's anxious and depressive symptoms may change over time, and may in part be due their particular monitoring or blunting coping style, or level of intolerance of uncertainty. A combination of both crosssectional and longitudinal hypotheses are investigated as screening variables may be useful at identifying patient needs both at the time of diagnosis and after a treatment decision has been made. This study also aimed to identify demographic and psychological characteristics of participants who are more likely to choose active surveillance as a treatment option. Secondary objectives are to investigate whether monitoring and blunting are statistically and conceptually distinct, and to investigate change in anxiety and depression levels over time.

The main independent psychological variables of interest are coping style (monitoring and blunting), and intolerance of uncertainty. The dependent variables of interest are information seeking, preferred level of involvement in treatment decision making, anxiety and depression, and treatment choice. Given the connections established in past research, this study's hypotheses fall into four areas: A. coping (monitoring and blunting) and distress; B. coping (monitoring and blunting), and information seeking and preferred level of involvement in treatment decision making; C. monitoring, intolerance of uncertainty and distress; and D. independent variables of interest and treatment choice (see figure 1). Hypotheses are as follows:

A. Relationship between monitoring and anxiety and depression, and blunting and anxiety and depression. Screening for participants' coping style may provide useful information about distress risk. Specific Hypotheses are:

A1. At time 1, individuals scoring high on monitoring will experience relatively more anxiety and depression compared to individuals scoring low on monitoring.

A2. At time 1, individuals scoring high on blunting will experience relatively less anxiety and depression compared to individuals scoring low on blunting.

A3. Individuals scoring high on blunting at time 1 will experience relatively more anxiety and depression at time 2 compared to individuals scoring low on blunting at time 1.

B. Relationship between monitoring and information seeking, and blunting and information seeking; and monitoring and blunting and preferred level of involvement in treatment decision making. Screening for participants' coping style may provide information about patient information preferences and preferred level of involvement in treatment decision-making. Specific hypotheses are:

B1. At time 1 individuals scoring high on monitoring will desire relatively more information compared to individuals scoring low on monitoring.

B2 At time 1 individuals scoring high on blunting will desire relatively less information compared to individuals scoring low on blunting.

B3. At time 1 individuals scoring high on monitoring will prefer a relatively more active role in making a treatment decision with their physician compared to individuals scoring low on monitoring.

B4. At time 1 individuals scoring high on blunting will prefer a relatively less active role in making a treatment decision with their physician compared to individuals scoring low on blunting.

C. Relationship between intolerance of uncertainty and psychological distress; relationship between monitoring, intolerance of uncertainty, and distress. Screening for participants' intolerance of uncertainty may provide information about participants' distress risk over time. Intolerance of uncertainty may also change distress risk. Specific hypotheses are: C1. Individuals scoring high on intolerance of uncertainty at time 1 will experience relatively more anxiety and depression at time 2 compared to individuals scoring low on intolerance of uncertainty at time 1.

C2. Intolerance of uncertainty at time 1 will mediate the relationship between monitoring at time 1 and distress at time 2.

D. Relationship between intolerance of uncertainty and treatment choice; relationship between coping, anxiety and depression, and demographic variables, and treatment choice. Exploratory analyses were conducted investigating the relationship of study variables to treatment choice. Specific hypotheses are:

D1. Individuals scoring high on intolerance of uncertainty at time 1 will be relatively less likely to choose active surveillance as a treatment option compare to individuals scoring low on intolerance of uncertainty at time 1. Additional exploratory analyses will be conducted investigating the relationship between other study variables and treatment choice.

2. Methods

2.1 Participants

Family physicians and urologists across British Columbia (BC) refer men to The Prostate Centre at Vancouver General Hospital for a diagnostic work-up based on an abnormal digital rectal examination and/or an elevated prostate specific antigen (PSA) blood test. Minimally based on biopsy results, only urologists diagnose men. Following diagnosis at The Prostate Center, urologists may also conduct surgery and/or refer men to the BC Cancer Agency to learn more about radiation treatment. Ideally, fully consecutive sampling would be used in the current study. However, data collection occurred in a very busy clinic. It was not unusual for two to three urologists to run clinics simultaneously. Patient appointments were routinely booked every 15 minutes, and sometimes even double or triple booked into each available time slot. Additionally, not all the urologists operating clinics at The Prostate Center agreed to allow their patients to consider participation in the current study. Unfortunately, such clinical and administrative barriers at The Prostate Center prevent strict consecutive sampling. The study sample therefore reflects a hybrid of consecutive and convenience sampling.

2.1.1 Sampling

Study participants were recruited from The Prostate Centre Clinic at Vancouver General Hospital. Eligible participants had completed a medical consultation where they were diagnosed with low or moderate risk, and early stage prostate cancer, usually within the last two weeks. To be eligible for study inclusion, potential participants must have been able to communicate adequately in English, and demonstrate no evidence of mental confusion as determined by their urologist. Participants meeting these criteria generally have several treatment options available to them and therefore are capable of making a treatment choice. In contrast, when newly diagnosed men with prostate cancer are classified as high risk, they have fewer viable treatment options. In some cases, preexisting medical and health factors may also limit a person's treatment options. For example, men who are very overweight, or with a history of ongoing treatment for other malignancies were excluded from participation if these factors limited treatment options, and did not allow for patient choices in treatment decision making.

2.1.2 Generalizability

Approximately 300 men receive a diagnosis of prostate cancer annually at The Prostate Center, and over the approximately three years of data collection, data were collected from 143 participants. Because a large percentage of men coming through the clinic (approximately 84%) were not invited to participate by their urologists, preliminary analyses were conducted to confirm the demographic representativeness of the current sample, compared to other similar research populations. The current sample was similar to other research samples of men diagnosed with early stage prostate cancer in terms of age, educational attainment, marital status, employment status, and clinical disease stage (Davison, Goldenberg, Wiens, & Gleave, 2007; Davison, So, & Goldenberg, 2007).

The vast majority of men currently referred to The Prostate Center at Vancouver General Hospital are able to speak English regardless of cultural background. They tend to be above average in education and socioeconomic status compared to the general population. In a consecutive sample, approximately 92% of participants newly diagnosed with prostate cancer had been diagnosed with early stage or low risk disease (Vodermaier, Linden,

MacKenzie, & Greig, 2010). Only early stage participants were included in the current study, and in this sense study participants are also representative of newly diagnosed men with prostate cancer more broadly.

2.2 Study design

The design of this naturalistic study is cross-sectional and longitudinal.

2.3 Measures

2.3.1 Demographics and disease characteristics

This questionnaire targets the usual personal (age, education, marital status, employment, income, and ethnicity) and disease-related (stage of disease, Gleason score, PSA, and treatment chosen) information. If theoretically important, and shown to contribute relevant statistical variance to dependent variables of interest, analyses control for these variables. Exploratory analyses also investigate the relationship of demographic variables to treatment choice.

2.3.2 Miller Behavioral Styles Scale

The Miller Behavioral Styles Scale (MBSS) measures an individual's tendency to seek or avoid threat-relevant information within the context of four hypothetical stressful scenarios: a dentist appointment, taken hostage by a group of armed terrorists, the threat of job loss, and flying in an airplane when something goes wrong. Each scenario is followed by eight possible response alternatives. Four of the response alternatives for each scenario relate to monitoring-type responses, and four to blunting-type responses. Participants select all response alternatives that apply to them.

This scale has been shown to be valid for predicting patient information preferences in a variety of different medical settings, including with several cancer populations (Miller & Mangan, 1983; Miller, 1995). The measure has shown acceptable overall internal reliability (Cronbach's alpha = .75) (Petersson et al., 2002), with the monitoring subscale of the MBSS, which is often used independently of the blunting subscale, yielding reliability coefficients (Cronbach's alpha) ranging between .70 (Miller, Rodoletz, Schroeder, Mangan, & Sedlacek, 1996) to .96 (Fang, Miller, Daly & Hurley, 2002). Data analysis indicates that in the current sample the monitoring subscale shows similarly good internal consistency (Cronbach's alpha = .77). Internal consistency of the blunting subscale has been called into question by some researchers, with alpha level of .41 found in a sample of 97 adult daughters of women with breast cancer. However, other research in different populations has yielded higher alpha levels (alpha = .67-.69; Miller, 1987). Analysis of the current sample indicates similarly poor internal consistency of the blunting subscale (Cronbach's alpha = .57). In past research, both the monitoring subscale and blunting subscale have demonstrated test-retest reliability over a period of four months (r(98) = .72, p < 0.01 and r(98) = .75, p < 0.01, respectively) (Miller, 1987). Ratings made on the MBSS have also been demonstrated as distinct from depression, trait anxiety, Type-A personality, repression-sensitization measures, desire for control, learning ability, and various demographic variables (Miller, 1987; Miller & Mangan, 1983).

It is important to note that while much of the research focusing on psychometric properties of this measure has involved female subjects, Miller and her colleagues consider the MBSS reliable for both males and females. That said, before data collection began for the current study, the MBSS was informally trialed with newly diagnosed men with prostate cancer in the Prostate Center to gauge their reactions to the four scenarios. There was no issue with men not being able to relate to being in any of the four situations. A range of coping styles from was also observed. Including this scale in the current study provides an opportunity to further explore its usefulness in an all male oncology population.

Summing all items endorsed on the monitoring subscale yields a participant's monitoring score, and the equivalent procedure is used to calculate blunting scores. The monitoring and blunting subscales of the MBSS can yield either continuous scores, or a mean or median cut off score can be used to categorize men as high or low monitors or blunters.

2.3.3 Intolerance of Uncertainty Scale

The Intolerance of Uncertainty Scale (IUS) was originally developed as a French language scale but has now been validated in English. Participants rate 27 items (for example: 'My mind can't be relaxed if I don't know what will happen tomorrow') on a five point Likert scale ranging from 'not at all characteristic of me' to 'entirely characteristic of me'.

The original French version of the scale aimed to assess emotional, cognitive and behavioral reactions to ambiguous situations, implications of being uncertain, and attempts to control the future. Factor analysis on the English translation of the scale identifies a four factor structure, but data suggest that only overall scores on the IUS should be used as overlap in the factors identified make them inappropriate for use as subscales (Buhr & Dugas, 2002; Norton, 2005). Psychometric research on a sample of 276 undergraduate students reveals excellent internal consistency (Cronbach's alpha = 0.94), and good five-week test-retest reliability (r= 0.74, p< 0.001, n=66, Buhr & Dugas, 2002; Antony, Orsillo & Roemer, 2001). Analysis of the current sample indicates high internal consistency as well (Cronbach's alpha = 0.92). At time 1 the mean of scores on the IUS (mean = 55.51, sd = 15.82) was more than one standard deviation greater than the mean for non-anxious

individuals, and at time 2, mean scores on the IUS (mean = 51.49, sd = 14.88) were slightly lower and within one standard deviation of the mean for non-anxious individuals.

Correlations with measures of worry, and partial correlations with measures of negative affect and reasons for worrying questionnaires, indicate good convergent and discriminant validity of the intolerance of uncertainty scale (Freeston, Rheaume, Letarte, Dugas & Ladouceur, 1994; Ladouceur, Talbot, & Dugas, 1997). Research also provides evidence that worry (as measured by the Penn State Worry Questionnaire) and intolerance of uncertainty are related but distinct constructs, as all study variables that were related to intolerance of uncertainty, other than intolerance of uncertainty, were found to be unrelated to worry. No significant gender differences have been reported for the IUS (Buhr & Dugas, 2002), and scores on the IUS have been found consistent across four racial groups (Norton, 2005).

2.3.4 Information resource preferences

Participants identified the types of information resources they have accessed: 1) since diagnostic work-up and prior to treatment consultation, 2) at the time of diagnosis, and 3) after making a treatment decision. There is currently no standardized tool available to measure the type of information resources men wish to access at the time of a PC diagnosis. The checklist of ten available information resources used in this study comes from previous research conducted at The Prostate Centre investigating the information preferences of men diagnosed with prostate cancer (Davison, Degner, & Morgan, 1995; Davison, Gleave, Goldenberg, Degner, Hoffart, & Berkowitz, 2002) and incorporates information resources currently available to men in various community urology clinics in B.C. and at the Prostate Centre. The checklist of information resources includes: 0. none (other than the basic information provided verbally by the urologist at treatment consultation); 1. a standardized written information package (provided by support groups for all newly diagnosed men in B.C.); 2. a list of suggested Internet sites; 3. a list of patient support groups' contact information in B.C.; 4. a DVD about prostate cancer and available treatment options; 5. attending a group dietary education session on eating a prostate friendly diet; 6. access to a family counselor to assist with distress over diagnosis of cancer (referral to BC Cancer Agency Patient Support Services and Counseling Program); 7. attending a group patient education session on making a treatment decision that meets men's preferences; 8. information on gaining access to complementary and alternative medicine therapies (referral to Centre of Integrated Healing in Vancouver); 9. information about clinical trials currently available at The Prostate Centre for men at the time of diagnosis; and 10. an appointment with a sexual health clinician to discuss the impact of treatments on sexual function, sexuality and masculinity.

Relatively high and low information seekers were identified by a count of the number of resources checked off (scores range from zero to ten), and by a global assessment of information preferences. This question asks the patient to indicate the amount of information they wish to access to make a treatment decision. Response options are: 1 = None; 2 =Minimal; 3 = Moderate Amount; 4 = Quite a Bit; and 5 = A Great Deal.

2.3.5 Control Preferences Scale

The Control Preferences Scale (CPS) consists of five statements that describe three different roles men can assume in treatment decision making with their physician. Roles range in nature from passive to collaborative to active. Psychometric data previously obtained using a card sort version of this scale and unfolding analysis has confirmed the majority of men newly diagnosed with prostate cancer do have systematic preferences about the degree of decisional responsibility they prefer, and that these preferences are reflected on responses on this measure (Davison, & Degner, 1997). A recent study has demonstrated that the unfolding approach yielded results not significantly different from those obtained using a pick-one statement methodology (Davison, Goldenberg, Gleave, & Degner, 2003; Davison, Goldenberg, Wiens, & Gleave, 2007). A pick-one methodology is used in the current study.

2.3.6 Psychosocial Screening Instrument For Cancer

The Psychosocial Screening Instrument for Cancer (PSSCAN) is a 21 item, freely available tool for which our team holds copyright. This measure captures psychological variables relevant to distress in cancer patients. It is designed at a relatively low reading level. Each item on the scale is answered in either a 'yes/ no' format, by reporting a number (i.e. the number of days during the last 30 days when the participant's physical health was not good), or on a one to five Likert scale. Item content domains include perceived social support (five items), desired social support (one item), health related quality of life (five items), anxiety (five items), and depression (five items). Scoring consists of tallying responses for items of each subscale.

Items were derived from established measures of the constructs including the Hospital Anxiety and Depression Scale (HADS), items from a scale used in evaluating social support in the Epidemiological Study for the Elderly, and the Health Related Quality of Life questionnaire. High concurrent validity was shown with established measures (including the HADS for depression and anxiety, and the ENRICHD (Enriched Social Support Instrument). As well, the tool has high internal consistency, with reported alphas averaging .83, and testretest stability over two months (r=.64) (Linden, Barroetavena, MacKenzie, & Doll, 2005). In the current sample, the internal consistency is higher for the anxiety subscale than for the depression subscale (Cronbach's alpha = .81 for anxiety, and Cronbach's alpha = .63 for depression).

Means are available for men with genital-urinary cancer (including prostate cancer): depression, 6.4 (sd= 2.5, n= 1912), anxiety, 6.7 (sd=2.7, n= 1912) (Vodermaier, Linden, MacKenzie, & Greig, 2010), perceived quality of life, 5.9 (sd=5.1, n=83), desired quality of life, 14.6 (sd=27.6, n=83), social support, 4.4 (sd=1.2, n=83), and desired social support, 2.8 (sd=3.4, n=83) (Linden, Barroetavena, MacKenzie, & Doll, 2005). Means and standard deviations for time 1 and time 2 anxiety in the current sample are reported in table 8.

A review of cancer screening tools concluded that distress screening should be considered necessary for providing adequate psychosocial care, especially at times of diagnosis and around critical treatment decisions. Screening requires relatively little investment of time and money, and is likely to save money by offsetting later medical costs. The brevity and strong psychometric profile of the PSSCAN tool makes it an ideal candidate for use in screening of men diagnosed with prostate cancer (Carlson & Bultz, 2003; Vodermaier, Linden, & Siu, 2009).

2.3.7 Knowledge questionnaire

Participants responded to a 20 item True/False format questionnaire tapping basic knowledge concerning prostate cancer diagnosis, progression, and treatment. Participant general knowledge of prostate cancer was proposed as a control variable in the analyses where theoretically appropriate.

2.4 Procedure

Data collection occurred between 2008 and 2010. Recruitment took place at the time of men's initial medical treatment consultation with their urologist, which was usually within two weeks following biopsy. Physicians had contacted the majority of men by telephone prior to their initial medical treatment consultation to inform them about their positive biopsy results. So in many cases their treatment consultation was not the first time men were told of their cancer diagnosis. Following medical consultation, where physicians explained biopsy results and outlined treatment options, individuals who met study inclusion criteria were provided with a letter of invitation describing the study. Potential participants had the opportunity at this point to discuss any questions or concerns they had about the study with a researcher. This discussion took place in a private room at The Prostate Centre clinic. Men had the opportunity to consent to participate at this time, or telephone the study coordinator with their decision within the next two weeks. No patient elected to return to the clinic within the next two weeks.

Researchers documented the total number of potential participants invited to participate in the study and the number of refusals.

Data collection occurred at two time points. Time point one (time 1) is after participants received a cancer diagnosis but before they made a treatment decision, and time point two (time 2) occurred approximately four months after time point one, after participants had made a treatment decision and begun active treatment if applicable.

2.4.1 Time point one

After obtaining informed consent, participants completed the following measures: 1) personal demographics; 2) the Miller Behavioral Styles Scale (MBSS), measuring

monitoring and blunting; 3) the Intolerance of Uncertainty Scale (IUS); 4) the Psychosocial Screening Instrument for Cancer (PSSCAN), measuring depression and anxiety; 5) the Control Preferences Scale (CPS), measuring participants' preferred role in treatment decision making with physician; 6) information resources utilized since diagnostic work-up and diagnosis; 7) preferred information resources the patient still wanted to access; 8) a global assessment of current information needs; and 9) a prostate cancer knowledge questionnaire. Participants also responded to a question asking if they had made a preliminary treatment decision at this time. The questionnaires took approximately 20-30 minutes to complete.

A researcher gathered disease-specific information (including PSA, clinical stage, Gleason score, number of positive biopsies, and history of other cancer diagnoses) from the person's clinic record.

After completing the questionnaires, whenever possible participants were provided with the type and amount of information resources they wished to access (depending on availability), or provided with information so that they may access these resources at a later time convenient to them (e.g., in the case of support groups or individual counseling sessions).

2.4.1.1 A note on partners

Participants often came to appointments at The Prostate Center with their partners. In order to minimize the potential influence of their partner's opinions, whenever possible, participants completed questionnaires in a room without their partners. However, participants often preferred to have their partners present, and it was often the case that partners were present in the room while participants completed study questionnaires. When partners were present, participants were monitored and encouraged as necessary to complete questionnaires independently. Partners received a contact telephone number if they wished to access additional information to meet their own needs.

2.4.2 Time point two

A major strength of this study was its longitudinal nature. Four months (plus or minus one month) after initial data collection, participants were mailed a second set of questionnaires to self-administer. Questionnaires were sent out with a cover letter reminding participants of their participation, and asking that participants fill out the enclosed questionnaires and return them in the self-addressed, stamped envelope provided. The cover letter also provided contact information for the researchers when participants had any questions or concerns. Mailings were preceded by a phone call alerting participants to the arrival of the package. Additional reminder phone calls were made for packages not returned within three to four weeks of mailing. A maximum of two reminder phone calls were made.

Time 2 packages were similar to time 1 packages, and contained the following questionnaires: 1) the Miller Behavioral Styles Scale (MBSS); 2) the Intolerance of Uncertainty Scale (IUS); 3) the Psychosocial Screening Instrument for Cancer (PSSCAN); 4) the Control Preferences Scale (CPS), measuring *assumed* role in treatment decision making with the physician (time 1 package measured *preferred* role); 5) information resources utilized since the treatment consultation; 7) preferred information needs; 9) the prostate cancer knowledge questionnaire; and 10) a checklist requiring the patient to indicate what treatment he had decided on. The time 2 questionnaire package also included a Preparation for Decision Making Scale which provided data of interest to a separate project. The questionnaires took approximately 20-30 minutes to complete.

3. Analysis and results

3.1 Power analyses

Past research exploring whether coping measures are predictive of depression or anxiety in cancer populations have found moderate effect sizes. For example, in a study of women with stage I or II breast cancer examining the relationship between coping (measured with a selection of subscales from the COPE) and distress three months later (measured with the Profile Of Mood States), a moderate effect size was found (according to Cohen's classification scheme (Cohen, 1992). Also, a meta-analysis exploring the relationships between approach and avoidance coping strategies and overall psychological adjustment in prostate cancer populations reported moderate effect sizes. Based on moderate effect sizes (f^2 = .15) and the inclusion of three control variables in each regression model, and to achieve power of .80, power analyses using G*Power showed that a sample of 85 was necessary in the current study to detect an effect of comparable size (alpha was set at .05) (n = 77 if only two control variables). Given that some participant drop out between the two tests was expected, as was the fact that some data were expected to be unusable for other reasons, additional participants were recruited.

Coping measures comparable to the IUS or MBSS are not routinely used in cancer care settings to screen for depression, anxiety, or to predict information preferences or treatment choice (as is investigated in the current study). However, there are examples of depression and anxiety screening measures that have been adopted for routine use in some centers. Study of a large Dutch sample investigating the validity of the Hospital Anxiety and Depression Scale (a psychological distress screening measure that has been widely adopted in different medical settings (Vodermaier, Linden, & Siu, 2010), indicates that the HADS

discriminates between psychiatric outpatients, general medical outpatients, and normal agematched controls, and that the associated effect sizes are in the small range. The screening measures under investigation in the proposed study, from past research, were expected to be associated with an as large if not a larger effect size than that associated with the HADS. If the effect size associated with a psychological screening measure has an impact on whether that measure is adopted for use in a clinical environment, given the current study design, the argument can be made that the measures under investigation are acceptably effective.

3.2 Assumption testing

Statistical tests consist of correlations, regressions, and bootstrapping procedures used to test mediational models. Before conducting statistical tests, assumptions of linearity, multicollinerity, homoscedasticity, and normality were investigated. Past research does not suggest the presence of non-linear relationships between the independent and dependent variables of interest in the current study. In the case of logistic regression, where the outcome variable is dichotomous (i.e. treatment choice), the assumption of linearity is necessarily violated. Further, any violation of the assumption of linearity in the current data set would result only in the regression equation underestimating the relationship between variables, conservatively biasing results. Correlational analysis did not reveal significant levels of dependence between independent variables of interest. Inspection of plots did not reveal troubling homoscedasticity but did suggest that certain variables (time 1 anxiety, time 2 anxiety, and IUS with anxiety questions excluded) were not normally distributed, which is a violation of an assumption made by the parametric statistical tests employed in the current study. However, when analyses were re-run using log-transformed and/or root-transformed versions of these variables, the pattern of results was identical. Because of this, and due to

conceptual concerns with interpreting transformed data, only results from the unaltered variables are reported.

3.3 Analysis strategy

Initial analyses focused on (I.) sample description and reliability of the MBSS and IUS scales. Also, correlational analyses were conducted to descriptively investigate relationships between the main variables of interest (II). The main analyses (III.) consist largely of regression and mediational models, and investigate the proposed hypotheses regarding the relationships between monitoring (and blunting), information seeking, and preferred level of involvement in treatment decision making; monitoring (and blunting) and anxiety and depression; the relationship between intolerance of uncertainty, psychological distress, and treatment choice; and predictors of treatment choice (see figure 1). In some cases there was no theoretical or statistical need to include control variables in analyses addressing major study hypotheses, and therefore no benefit arose in computing a regression model in addition to the correlational analysis completed in section II. In these cases, a study hypothesis was addressed in section III by directing attention to the earlier relevant analysis. Both descriptive and predictive analyses address whether certain predictive variables (i.e. monitoring and blunting) and outcome variables (i.e. anxiety and depression) are statistically distinct in the current sample, and investigated whether or not anxiety and depression changed significantly between time 1 and time 2.

3.4 Sample description and reliability of the MBSS and IUS scales

Despite the time-sensitive nature of data collection, the fact that time 1 data were collected at a potentially emotionally difficult time for men (at the time of cancer diagnosis and perceived pressure to make a treatment choice), the long wait times before appointments at the Prostate Center, and the hectic environment of the clinic, there was a high rate of agreement to participate in the current study. Over the approximately three years of data collection, a total of 159 potential participants were approached and asked if they were interested in participating in the study. Of these, 143 agreed to participate. Reported reasons for non-participation mostly centered around not having enough time (e.g., parking meter running out), already having agreed to participate in other studies and wanting to reduce the burden of additional paperwork, or not being interested. From the full data set of 143 participants, 127 were included in analyses because they met the inclusion criteria and therefore had multiple treatment options available to them, i.e., diagnosed with early stage cancer, no history of multiple malignancies or other medical factors that would limit their potential treatment options (e.g. obesity). At time 2 follow-up, 31 of the study participants elected not to continue their participants with early-stage prostate cancer (Stanford, et al., 2000).

Descriptive analyses were conducted to describe the study sample's demographic characteristics. Because of drop-out, the second aim of sample description was to compare the sample at time 1 with the remaining sample at time 2 and the drop outs at time 1. Analyses indicate that the demographic make up of the time 1 and time 2 samples were very similar in terms of age (time 1 mean 62.40 years, range 44-79 years, n = 127; time 2 mean 62.76 years, range 45-80 years, n = 75), education (at time 1 75.7%, n = 127, of the sample had a trade or community college certificate or more education, this was true for 75.1%, n = 96, of the sample at time 2), employment status (at time 1, 47.2% of the sample was working full-time and 41.7% of the sample was retired, n = 127; at time 2 47.9% of the sample was

working full-time and 40.6% of the sample was retired, n = 96), relationship status (at time 1 81.9%, n = 127, of the sample was married or living with a partner, this was true for 82.3%, n = 96, of the sample at time 2), ethnicity (at time 1 87.4%, n = 127, of the sample identified as Caucasian, this was true for 87.5%, n = 96, of the sample at time 2), and income (at time 1 72.5%, n = 127, of the sample had an income of \$50,000 per year or greater, at time 2 this was true for 74.0%, n = 96, of the sample). When comparing the demographic characteristics of individuals who remained in the study with those who dropped out, participants were also similar. See table 1 for more details.

The time 1 sample, time 2 sample, and drop outs were also similar in terms of disease characteristics including PSA (time 1 mean = 7.06, sd = 5.25, range = 1-44, n = 126 with elimination of one outlier; time 2 mean = 6.85, sd = 4.97, range = 1-44, n = 96), clinical stage (all early stage) (at time 1 47.3%, n = 127 of participants were classified at stage t1a or t1c; at time 2, 48.9%, n = 96, of participants were classified at stage t1a or t1c), and Gleason risk (at time 1, 88.2%, n = 127, of participants were classified as Low, this was true for 87.5%, n = 96, of participants at time 2). In terms of previous cancer diagnoses, at time 1 92.9% (n = 127) of participants did not have a previous cancer diagnosis. This was true for 92.7% (n = 96) of participants at time 2. When comparing disease characteristics of individuals who remained in the study with those who dropped out, participants were again similar. See table 2 for more details.

The predictive variables of interest showed stability over the four-month longitudinal follow-up. This was true for the monitoring subscale (r = 0.51, p < 0.01, n = 96), the blunting subscale (r = 0.57, p < 0.01, n = 96), and the Intolerance of Uncertainty Scale (r = 0.72, p < 0.01, n = 85) (see table 3).

Monitoring and blunting are conceptualized as distinct constructs (Miller, 1987). This is also true for anxiety and depression, which are often described as having distinct but overlapping variance (Linden, Barroetavena, MacKenzie, & Doll, 2005). Descriptive analyses of these variables as measured in the current study were congruent with the statistical and conceptual distinctions found in the literature. To confirm distinctions between study variables, correlations were calculated among monitoring and blunting, and anxiety and depression. Data indicate the monitoring and blunting were not significantly correlated, either at time 1, or four months later at follow up. Also, anxiety and depression scores were correlated significantly both at initial data collection, and at follow-up (r = 0.53, p < 0.01, n = 127; and r = 0.58, p < 0.01, n = 96, respectively). See table 4 for details.

3.5 Correlational analyses investigating the main variables of interest

Correlations among time 1 and time 2 variables of interest were calculated as an additional stage of sample description, and are not generally meant to reflect hypothesis testing. For this reason, a 2-tailed test of correlation is used even though the related hypotheses (described in the following section) are directional. The large sample size of the current study is another justification for using this more conservative test. Although significant correlations do indicate that some relationship is present between two variables, this analysis does not rule out the possibility that third variables may be implicated in the relationship, or that the variables analyzed are not acting as proxies for unknown variables.

Although the questions on the IUS scale all target reactions specific to uncertainty and uncertain situations, while questions targeting anxiety on the PSSCAN (the measure of distress) are more general, there is some overlap between questions on the IUS scale and questions targeting anxiety on the PSSCAN. To be certain that results are not an artifact of this overlap, all analyses using IUS to predict anxiety were run two times, once including the full IUS scale, and once excluding the questions with overlap with questions targeting anxiety on the PSSCAN (questions 5, 6 and 26 on the IUS scale). In many cases of (correlational and regression) analyses involving the IUS scale, the pattern of results was similar regardless of whether the original measure of IUS was used, or a measure altered to exclude questions potentially targeting anxiety was used. Results from both analyses are reported for completeness sake.

3.5.1 Correlations between time 1 variables

Correlations between time 1 variables of interest indicated mixed results. In general, coping style variables (including monitoring and blunting) were related to information seeking outcomes (including the number of different sources of information preferred, and a global assessment of information preferences), but not differentially. Monitoring was significantly correlated with a global measure of information seeking preferences (r = 0.21, p < 0.05, n = 127), and a tally of the number of sources of information a participant endorsed wanting access to (r = 0.38, p < 0.01, n = 127). Blunting was also significantly correlated with a global measure of information seeking preferences (r = 0.23, p < 0.01, n = 127), and a tally of the number of sources of information a participant endorsed wanting access to (r =0.23, p < 0.01, n = 127). As well, Intolerance of Uncertainty (IUS) was related to distress outcomes (including anxiety and depression) (r = 0.44, p < 0.01, n = 114 for anxiety; r =0.32, p < 0.01, n = 114 for depression). In the current analyses, the opposite pattern of results was not true (i.e. coping style variables were not significantly related to distress outcomes and IUS was not related to information seeking outcomes.) Monitoring, blunting, and IUS were not correlated with Control Preferences (the variable targeting participants' preferred

level of involvement in treatment decision making with their physician). See table 5 for details.

3.5.2 Correlations between time 1 and time 2 variables

Correlations between time 1 and time 2 variables of interest indicated that, similar to time 1, neither monitoring nor blunting was correlated with depression as measured at time 2. Monitoring measured at time 1 was not correlated with time 2 anxiety, but blunting was significantly correlated with time 2 anxiety (r = 0.25, p < 0.05, n = 96). In terms of intolerance of uncertainty, the relationship with anxiety as measured at time 2 was no longer significant, but the relationship with depression as measured at time 2 remained significant (r = 0.24, p < 0.05, n = 85). See table 6 for details.

3.5.3 Correlations between time 1 variables of interest and change scores in anxiety and depression

Anxiety and depression may change differentially over time. Looking at correlations among independent variables and dependent variables at either time 1 or time 2 does not capture the potential change in individual participants' anxiety and depression over the course of their cancer trajectory. Change scores capture this inter-individual variability with more accuracy.

Simple change scores in anxiety and depression were calculated by subtracting values measured at time 2 from values measured at time 1, and then adding a constant to eliminate any negative values. Monitoring as measured at time 1 was significantly correlated with change in anxiety over four months (r = 0.22, p< 0.05, n = 96). The correlation between monitoring and change in depression was not significant. Blunting was not significantly correlated with change in either anxiety or depression over time. Intolerance of uncertainty

was negatively correlated with change in anxiety (r = -0.28, p = 0.01, n=85 for full IUS, r = -0.26, p < 0.05, n = 85 for IUS minus questions with overlap with questions targeting anxiety on the PSSCAN). Intolerance of uncertainty was not correlated with change in depression over time.

Results from correlations between independent variables and change scores in distress indicate that individuals relatively high in intolerance of uncertainty have relatively smaller change scores in anxiety over time. While moderate change scores reflect relatively little change in anxiety levels over the four months between diagnosis and treatment, relatively smaller change scores reflect relatively high initial anxiety that dissipates over time. Results also indicate that individuals relatively low in IUS have relatively large change scores in anxiety. Large change scores in anxiety reflect relatively low initial anxiety and a relative increase in anxiety over time. Results also indicate that individuals relatively low on monitoring either have anxiety that decreases over time, and that individuals relatively high on monitoring have may have greater relative increases in anxiety over time. See table 7 for details.

3.5.4 Effect sizes and direction of change in anxiety and depression over time

Analyses indicate that there is a statistically significant decrease in mean anxiety scores between time 1 and time 2 (t(95) = 3.22, p = .002), while the slight decrease in depression scores between the two time points did not meet statistical significance (see figure 2). More than this, the decrease in anxiety scores over time may also have clinical significance. Based on a cutoff score of 11 on the Psychosocial Screening Instrument for Cancer (which indicates anxiety symptoms comparable to diagnosis of an anxiety disorder using the Hospital Anxiety and Depression Scale cutoffs) at time 1, 14% of the sample met criteria for clinically significant anxiety symptoms, and 7.2% met criteria for clinically significant depression symptoms at time 2; the percentage decreased to 8.3% for anxiety, while the percentage for depression increased slightly to 9.3%. Anxiety and depression means are all within one standard deviation of the mean of a large comparison sample of men with genital urinary cancer, including prostate cancer (Vodermaier, Linden, MacKenzie, & Greig, 2010). See figure 2 for a graphical representation of anxiety and depression means at time 1 and time 2.

Cohen's d was calculated to compare effect sizes of change in anxiety and depression over the four month follow-up period. According to convention (Cohen, 1992) the change in anxiety over time is of a medium effect size (d = 0.39), while the effect size of change in depression over time is negligible (d = 0.05). See table 8.

3.6 Predictive analyses investigating proposed study hypotheses

Proposed study hypotheses investigated the predictive relationship between A. monitoring and anxiety and depression, and blunting and anxiety and depression; B. monitoring and information seeking, and blunting and information seeking; and monitoring and blunting and preferred level of involvement in treatment decision making; C. intolerance of uncertainty and psychological distress; the relationship among monitoring, intolerance of uncertainty, and psychological distress and D. intolerance of uncertainty, demographic variables, coping variables, anxiety and depression, and treatment choice (see figure 1 for a graphical representation of hypotheses). Each proposed hypothesis is addressed below.

3.6.1 Determination of control variables

Potentially relevant control variables for specific analyses were identified via literature review. Once control variables for each planned predictive analysis were identified,

correlational testing was used to determine the inclusion of these variables in predictive models. Relevant control variables were included in models where they showed significant correlations with the outcome variables under investigation. The approach of including all theoretically relevant control variables in all analyses regardless of statistical relevance was not used in order to maximize the power of analyses. In cases where no proposed control variables were significant, and this resulted in proposed models having a single predictive variable, regression was no longer an appropriate statistical technique. In these cases, correlational tests are referenced.

3.6.2 Relationship between monitoring and anxiety and depression, and blunting and anxiety and depression

A1. At time 1, individuals scoring high on monitoring will experience relatively more anxiety and depression compared to individuals scoring low on monitoring.

Summary of rationale. Monitoring coping style is characterized by an orientation toward threat. This suggests that monitoring will be related to distress (anxiety and depression) at the time of diagnosis. In addition, if monitoring coping style is related to other variables relevant to the treatment decision making process (i.e. information preferences and preferred level of involvement in treatment decision making), screening for monitoring coping style at the time of diagnosis may be clinically informative.

Results. Hypothesis A1 was not supported. Because mental health tends to improve with age, age was proposed as a theoretically relevant control variable for both these analyses. No statistically relevant control variables were identified. Correlational analyses (described above, and presented in table 5) indicate monitoring was not correlated with either anxiety or depression at time 1.

A2. At time 1, individuals scoring high on blunting will experience relatively less anxiety and depression compared to individuals scoring low on blunting.

Summary of rationale. Given that blunting is an avoidance-based coping strategy involving 'blocking out' or ignoring threatening information, high blunters were expected to have relatively lower anxiety and depression at time 1.

Results. Hypothesis A2 was not supported. As above, because mental health tends to improve with age, age was proposed as a theoretically relevant control variable for both these analyses. No statistically relevant control variables were identified. Correlational analyses (described above, and presented in table 5) indicate blunting was correlated with neither anxiety nor depression at time 1.

A3. Individuals scoring high on blunting will experience relatively more anxiety and depression at time 2 compared to individuals scoring low on blunting.

Summary of rationale. Individuals with a blunting coping style may be at risk for the development of distress over time (because their avoidance perpetuates distress). For example, blunting may result in not attending to health needs and the development of new problems. Because in clinical practice distress screening usually takes place at diagnosis, individuals who initially show little distress but whose distress increases over time may not be 'plugged in' to appropriate psychological services. Additionally, because hospital resources are limited, identifying individuals scoring high on blunting, and providing early intervention, may save time and monetary costs related to eventual distress. Exploring change in negative affect requires longitudinal research strategies and could therefore be undertaken here.
Results. Some participants will have undergone surgery or other invasive treatment at the time of the second data collection period. Side effects of active treatments and recovery from surgery may influence distress experienced by participants at this time. Because of this, it is relevant to control for participants' level of physical health/functioning. Preliminary analyses indicate that physical functioning as operationalized both by a global, Likert-type self-report of general health, and a count of the amount of days in the past two weeks where the patient felt not in good health are statistically relevant control variables. Age is a theoretically relevant control variable for reasons discussed above, but was not found to be statistically relevant. Hypothesis A3 was tested with two regression models, one with time 2 anxiety as the dependent variable, and one with time 2 depression as the dependent variable. In both models step one included the two indices of physical health, and step two included time 1 blunting scores.

Analyses did not support hypothesis A3. For the model investigating the variance in time 2 anxiety, physical health as operationalized globally, predicted significant variance such that individuals who had poorer health were more anxious ($\beta = -0.29$, t = -2.72, p = 0.01). No significant variance was predicted by physical health operationalized by a tally of the number of days in the past two weeks a participant was feeling unwell. Consistent with prediction, and correlational analyses, blunting was found to contribute significant additional predictive power to the model over and above the variance in outcome attributable to physical health, such that higher blunters were more anxious at time 2 ($\beta = 0.23$, t = 2.36, p = 0.02; R² change = 0.05, p = 0.02). However, this significant effect disappeared when time 1 anxiety was added into the first step of the model, indicating that screening for blunting did not provide significantly more information about the development of anxiety at

time 2, over and above the variance explained by anxiety as measured at the time of diagnosis. For detail see table 9.

For the model investigating the change in depression over time, neither physical health index was significant, and, consistent with correlational analyses, blunting did not contribute significant additional predictive power to the model over and above the variance in outcome attributable to physical health. For details see table 10.

3.6.3 Relationship between monitoring and information seeking, and blunting and information seeking; and monitoring and blunting and preferred level of involvement in treatment decision making

B1. At time 1 individuals scoring high on monitoring will desire relatively more informationB2 At time 1 individuals scoring high on blunting will desire relatively less information

Summary of rationale. While there is variability in the type and amount of information preferred by men, clinical experience indicates that the information provided tends to vary with practitioner, not with patient preferences. High monitors, who use an active and approach-based coping strategy, were expected to want more information at the time of diagnoses. High blunters, who use avoidance-based coping strategies, were expected to desire less information in order to make their treatment decision. Recognition that information preferences may vary by coping style may raise awareness that not all individuals prefer, or may benefit equally from, provision of the same type and amount of information.

Results. Results support hypothesis B1, but not hypothesis B2. Because many participants have learned of their diagnosis by phone call before coming in for their treatment consultation, proposed relevant control variables for these analyses included information

already accessed before participants' treatment consultation, and level of knowledge regarding potential treatment options and associated side effects. Age was also proposed as a control variable as patient attitudes toward specialist recommendation and treatment decision making have changed over time, such that there is a general trend for younger individuals to be more critical in making these decisions. Patient information preferences were operationalized in two ways: by a global assessment of information preferences, and by a tally of the amount of different kinds of information that participants prefer. No statistically relevant control variables were identified for analyses where information preferences were operationalized globally. Age was statistically relevant, and thus was included as a control variable in the analysis where the outcome was patient information preferences operationalized with a tally.

3.6.3.1 Distinguishing monitoring and blunting

Because descriptive analyses support the assertion that monitoring and blunting are statistically distinct constructs, sub-analyses investigated the differential predictive ability of blunting, over and above monitoring, on time 1 information preferences. This extra step was taken to attempt to get additional clarification of the usefulness of the blunting construct in predicting information preferences. Hierarchical regression analyses were used for significance testing where step one included monitoring, and step two included blunting. Regression found that age significantly predicted variance in information preferences quantified by a tally such that older participants wanted less information ($\beta = -0.20$, t = -2.43, p = -0.017). Also consistent with descriptive correlational analyses, in both models, monitoring was found to significantly and positively predict information preferences ($\beta = -0.21$, t = 2.43, p = -0.017 for the global measure, and $\beta = 0.39$, t = 4.77, p < 0.001 for a count).

Blunting was found to contribute significant additional predictive power to both models over and above the variance in outcome attributable to monitoring ($\beta = 0.22, t = 2.53, p = .013$; R^2 change = 0.047, p = .013, for the global measure, and $\beta = 0.17, t = 2.10, p = .038$; R^2 change = 0.028, p = .038, for a count). Interestingly, and consistently with correlational analyses, the effect of blunting on information preferences was opposite to the hypothesized direction (it was found that high blunters desired more information at time 1). For details regarding information preferences operationalized via global measure, see table 11, for details regarding information preferences measured via tally see table 12.

B3. At time 1 individuals scoring high on monitoring will prefer a relatively more active role in making a treatment decision with their physician compared to individuals scoring low on monitoring.

B4. At time 1 individuals scoring high on blunting will prefer a relatively less active role in making a treatment decision with their physician compared to individuals scoring low on blunting.

Summary of rationale. Because they tend not to shy away from threatening information, individuals scoring high on monitoring may desire greater involvement in their treatment decision making compared to low monitors. By the same token, as bunting is an avoidance coping style, high blunters were expected to desire less active involvement in treatment decision making (compared to low blunters) at time 1.

Results. Results did not support hypotheses B3 and B4. Age was a proposed control variable because coping strategies tend to change with age. Age was included as a control variable in the first step in hierarchical linear regression analyses as it was also found to be statistically relevant. One analysis included monitoring as the independent variable in the

second step, while the other included blunting. In both cases, the outcome variable was control preferences, or the degree of relative involvement participants reportedly preferred to have in their treatment decision making with their physician. For both models, regression found that age significantly predicted variance in control preferences such that older participants preferred less control relative to their urologist in making their treatment decision ($\beta = 0.18$, t = 2.04, p < 0.05). Consistent with descriptive correlational analyses, neither monitoring nor blunting was found to predict additional significant variance in participants' preferred level of involvement in treatment-decision making (see table 13 for monitoring results, see table 14 for blunting results).

3.6.4 Relationship between intolerance of uncertainty and psychological distress; relationship between monitoring, intolerance of uncertainty, and psychological distress C1. Individuals scoring high on intolerance of uncertainty will experience relatively more anxiety and depression at time 2 compared to individuals scoring low on intolerance of uncertainty. (And if so, does IUS predict distress at time 2 over and above monitoring and blunting?)

C2. Intolerance of uncertainty will mediate the relationship between monitoring and distress at time 2.

Summary of rationale. Although information provision can address some patient needs and potentially reduce distress, the extent to which information needs can be addressed through information provision is limited by the extent to which relevant information is available. In the case where information is not available, distress may result from intolerance of (remaining) uncertainty. In addition to IUS possibly having a direct effect on distress experienced at time 2, IUS may predict distress experienced at time 2, after participants have

had a chance to absorb available information. Taking into account statistically relevant control variables, if IUS is found to explain a statistically significant amount of variance in the outcome, then an additional model will test whether this holds true with the addition of time 1 monitoring and time 1 blunting. IUS may also mediate the relationship between monitoring and time 2 distress. By investigating the utility of time 1 IUS in predicting time 2 anxiety and depression, these analyses take advantage of the longitudinal design of this study in order to attempt to identify variables that may be useful in screening men diagnosed with prostate cancer at the time of their diagnosis for risk of the development of distress four months following their diagnosis.

Results. Results partially support hypothesis C1. For the regression model investigating the amount of variance explained in time 2 anxiety by IUS measured at time 1, theoretically relevant control variables include age and physical functioning after treatment (discussed above). The physical functioning indices were statistically relevant, but age was not, therefore only the physical functioning variables were included in the model. Also as discussed above, analyses predicting anxiety from IUS would be rerun using the IUS scale excluding questions with semantic overlap with questions targeting anxiety on the PSSCAN if significant results were found. Step one of the model included the two physical health indices, step two included IUS, and the dependent variable is time 2 anxiety. Regression found that physical health as measured by a tally of days not feeling well predicted variance in time 2 anxiety such that individuals with poorer physical health were more anxious ($\beta = 0.23$, t = 2.02, p < 0.05). Consistent with descriptive correlational analyses, IUS was not significantly predictive of variance in time 2 anxiety (see table 15 for details).

For the model investigating the amount of variance explained in time 2 depression by IUS measured at time 1, theoretically relevant control variables also included age and physical functioning after treatment. Also as above, the physical functioning indices were statistically relevant, but age was not, therefore only the physical functioning variables were included in the model. Because of the overlap between the IUS scale and the PSSCAN, analyses involving IUS would be rerun using the IUS scale excluding questions with semantic overlap with questions targeting anxiety on the PSSCAN if significant results were found. Step one of the model included the two physical health indices, step two included IUS, and the dependent variable was time 2 depression. Regression found that neither physical health index significantly predicted variance in the model. Consistent with descriptive correlational analyses, IUS was significantly predictive of variance in time 2 depression over and above variance predicted by step one of the model ($\beta = 0.22, t = 2.02, p$) = .047; R^2 change = .044, p = .047, see table 16 for more detail). However, although the β only decreased by 0.01, the significant effect of IUS disappeared when the model was rerun replacing IUS with the IUS variable adjusted to eliminate overlap with questions targeting anxiety on the PSSCAN (see table 17 for details).

For completeness sake, a model similar to the one described above was run investigating the predictive power of the unadjusted IUS score over and above that of time 1 monitoring and time 1 blunting. Step one included variables to control for participants' physical functioning, step two included time 1 monitoring and blunting, and step three included time 1 IUS. The dependent variable was time 2 depression. Regression found that neither physical health index predicted significant variance in time 2 depression. Consistent with descriptive correlational analyses, monitoring was not significantly predictive of variance in time 2 depression, but inconsistent with descriptive correlational analyses, blunting did significantly predict variance in the outcome, such that higher blunters were more depressed ($\beta = 0.22, t = 2.11, p = .038$). However, earlier results show that this significant effect disappears when monitoring is not included in the model. As well, overall, the additional variance predicted by step two of the model was not significant. IUS was also not found to predict additional significant variance. See table 18 for details.

Results do not support hypothesis C2. For the model investigating whether intolerance of uncertainty mediates the effect of monitoring on distress (see figure 3 for a schematic display of the proposed model), theoretically relevant control variables also included age and physical functioning after treatment. The physical functioning indices were statistically relevant, but age was not, therefore only the physical functioning variables were included in the model.

Bootstrapping techniques were used to test the model that intolerance of uncertainty mediates the effect of monitoring on depression and anxiety. Although the direct effect of monitoring on distress was not significant, intolerance of uncertainty may significantly mediate the relationship between monitoring and distress. For example, even if the degree to which individuals are characterized by a monitoring coping strategy does not directly affect how distressed they are four months following their treatment decision, it is still possible that the degree to which individuals are characterized by a monitoring coping strategy may influence their intolerance of uncertainty, which in turn influences their distress. This observation would be consistent with a mediation model where the indirect effect is significant, but the direct, or main, effect is not. (For additional explanation about testing for significant indirect effects in the absence of significant main effects see Hayes, 2009.)

As determined via bootstrapping techniques (based on 5,000 resamples), neither mediation model was found to be significant. Neither the standardized effect of monitoring on anxiety through intolerance of uncertainty, nor the standardized effect of monitoring on depression through intolerance of uncertainty, was significant (β =.0046, CI₉₅=[-.022, .051] for anxiety; and β =.013, CI₉₅=[-.049, .078] for depression). (Rerunning analyses replacing the measure of intolerance of uncertainty with the intolerance of uncertainty variable minus items with overlap with questions targeting anxiety on the PSSCAN yielded similar nonsignificant results.)

3.6.5 Relationship between intolerance of uncertainty and treatment choice; relationship between coping, anxiety and depression, and demographic variables, and treatment choice

D1. Individuals scoring high on intolerance of uncertainty will be relatively less likely to choose active surveillance as a treatment option.

Summary of rationale. Increased uptake of AS may result in decreased costs to the health care system without compromising patient morbidity or mortality. However, men on an AS program need to tolerate a significant amount of uncertainty. If intolerance of uncertainty is a limiting factor in the uptake of AS, the burden of this uncertainty must be weighed against the unwanted side effects of active treatment. Intolerance of uncertainty may be an important variable to target in interventions encouraging uptake of AS.

Other variables may also be important in predicting which men choose AS as their treatment option. There has been very little past work in this area. Exploratory analyses were conducted examining theoretically important variables (including demographic variables, anxiety and depression, and coping style) to determine if relationships exist.

Results. Results did not support hypothesis D1. No study variable predicted treatment choice. Binary logistic regression was used to analyze the relationships among study variables of interest and treatment choice (active surveillance vs. active treatment). Continuous predictors of interest included patient age, time 1 monitoring, time 1 blunting, time 1 anxiety, time 1 depression, time 2 anxiety, time 2 depression, time 1 intolerance of uncertainty, and time 1 intolerance of uncertainty without questions that overlap questions targeting anxiety on the PSSCAN. Categorical variables of interest included education, employment status, income, and relationship status. As no similar literature in this area was found, no control variables were included in these exploratory analyses. When predicting participants' treatment choice, neither the model, nor any individual predictor reached significance. See Table 19 for full results for continuous variables and Table 20 for full results for categorical variables.

4. Discussion

This study was the first quantitative study of the information needs and treatment choice determinants in a good-sized sample of men diagnosed with early stage prostate cancer. Furthermore it was longitudinal in nature and was actually able to inform readers which traits or coping styles predict emotional adjustment over time.

Study hypotheses fell into four main areas, A. the relationship between coping style (monitoring and blunting), and distress (anxiety and depression); B. the relationship between coping style and information seeking, and coping style and preferred level of involvement in treatment decision making; C. the relationship between coping style, intolerance of uncertainty, and distress; and D. predictors of treatment choice.

Summary of results. In terms of coping style and distress, monitoring was not found to be related to distress indices at time 1 or time 2. Relatively high blunting scores accounted for time 2 depression only when the regression model accounted for monitoring, and blunting did not predict significant additional variance in depression over and above health indices. Relatively high monitoring, and surprisingly, relatively high blunting as well, were both positively related to information preferences at the time of diagnosis. Coping style did not explain significant variance in preferred level of involvement in treatment decision making. Intolerance of uncertainty was predictive of time 2 depression, but not anxiety. However, intolerance of uncertainty did not predict significant additional variance in depression over and above coping style. Intolerance of uncertainty did not mediate the effect of monitoring on anxiety or depression. No study variable was found to be predictive of treatment choice. See figure 4 for a schematic of the significant relationships found in the study.

4.1 The relationship between coping style and distress

Neither monitoring nor blunting was correlated with distress at time 1. Initial analyses indicated that blunting did not account for significant variance in time 2 depression. The generally low levels of anxiety and depression in the current sample may play a role in the lack of results supporting the relationship between coping style and distress outcomes. Despite this, when analyses controlled for monitoring, blunting predicted some variance in time 2 depression. Overall, the current study showed only a weak and not robust association between blunting and time 2 depression. With these factors in mind, possible reasons for any association between blunting and depression are discussed below.

Blunting, and not monitoring, may show a relationship with depression at four-month follow-up, and not immediately following diagnosis, because it may require time and the accumulation of experiences from the start of the cancer trajectory for an avoidant style to result in elevated feelings of distress. Available study results suggest that blunting is not an adaptive long-term strategy in terms of distress outcomes. Although the timeline in the current study is more specific (in that depressive symptoms following a stressful event may take time to manifest), these findings are consistent with other studies investigating the relationship between coping and distress.

Meta-analysis has found that men with prostate cancer who engaged in more approach-coping (compared to avoidance-coping) fare better psychologically than men who show the opposite coping strategy (Roesch, et. al, 2005). Approach coping was significantly and negatively related to measures of anxiety and depression. Avoidance coping, on the other hand, was significantly related to decreased positive affect. Although meta-analysis did not find that avoidance coping was significantly related to measures of distress, depression was

found to be related to emotion-focused coping, which has some conceptual overlap with the blunting construct (Roesch, et. al, 2005). Avoidant coping strategies have also been shown to be more depressogenic than approach and problem-focused strategies in other medical populations. Specifically, the use of avoidant coping strategies in response to negative life events has been shown to lead to increases in depressed mood in men diagnosed with HIV (Folkman, Chesney, Pollak, & Coates, 1993).

There is less support in the established literature concerning mechanisms explaining the relationship between an avoidant coping style and depressive symptoms in men diagnosed with cancer. A blunting-type coping style may place individuals at increased risk for experiencing depression over time via multiple avenues. One possibility is that blunters may spend more time ruminating. Literature indicates that attempts at thought suppression, an avoidant coping strategy, are known to not work, and may feed rumination (Gross, & Levenson, 1997). Thought suppression is tapped by the blunter subscale of the Miller Behavioral Styles Scale (i.e. a response option when given the job loss threat vignette is 'I would push all thoughts of being laid off out of my mind'). Avoidance may also lead to depression in men diagnosed with cancer through other routes. Despite the fact that blunters are motivated by a desire to avoid threatening information, this avoidance may also result in decreased potential of discovering reassuring information (about prognosis, etc.). Avoidant copers may also experience fewer opportunities to build confidence in their own abilities to cope with any uncomfortable or upsetting emotions or experiences related to their cancer. Over time, avoidant copers may be less informed regarding prostate cancer in general, and the specifics of their own disease. Because of this they may have relatively more experiences that reinforce feelings of helplessness and lack of control. Finally, avoidant copers may elicit

less professional support and informal social support, putting them at increased risk for experiencing depression.

4.2 The relationship between coping style and information seeking, and and coping style and prefered level of involvement in treatment decision making

4.2.1 The relationship between coping style and information seeking

Individuals scoring high on monitoring preferred more information at the time of their diagnosis. This was also true for individuals scoring high on blunting. The finding that individuals scoring high on monitoring preferred relatively more information at the time of their diagnosis is consistent with a coping style characterized by an orientation toward threat, and consistent with published literature in other medical populations (Miller & Mangan, 1983; Miller, 1995; Miller, Rodoletz, Schroeder, Mangan, & Sedlacek, 1996). The current study is the first to demonstrate this finding in a prostate cancer population.

The finding that individuals characterized by a blunting coping style also preferred relatively more information is surprising, and contrary to predictions. It is also true that blunting predicts additional variance in information preferences over and above monitoring, suggesting that the variance in information preferences accounted for by monitoring does not completely overlap with the variance accounted for by blunting. The blunting construct produced a number of confusing results in this study and raise the issue of the potential value of blunting as a research variable. The alpha level of the blunting subscale in the current sample was low and this is actually similar to what was observed in studies on the psychometrics of the MBSS (Miller, 1987). A basic tenet of psychometrics is of course that measures of traits with low reliability are automatically associated with validity problems.

Another, not mutually exclusive explanation for the positive association between blunting and information seeking may be that monitors and blunters are seeking information for different reasons. Perhaps monitors are seeking information because they plan to engage with that information and actively process information related to their cancer diagnosis. High blunters, on the other hand, may respond more variably to a question targeting their information preferences. Some blunters may endorse preferring few information resources. Others blunters may endorse preferring relatively more informational resources out of a sense of obligation and responsibility (while secretly planning or already knowing that they probably won't read the material). It is also possible that individuals scoring high on blunting may prefer to collect information with varying intentions related to that information. Blunters may prefer to collect resources such as literature on cancer as a way of delaying having to cognitively engage with threatening information about their diagnosis. For example, having information resources on hand such as literature may allow them to procrastinate and avoid approaching that information (or they may not truly intend to read the literature).

In depth qualitative research of a sample of individuals with breast, prostate, and colorectal cancer characterizes health information seeking behavior (HISB) in a cancer population as characterized with active information seeking versus minimal information seeking framework. The new theory presented makes more finely grained distinctions between different types or 'approach' or 'avoidance' patterns of information seeking, and suggests that information seeking patterns that have traditionally been subsumed under the label 'blunting' actually consist of two separate patterns characterized by disinterest and avoidance (Lambert, Loiselle, & Macdonald, 2009a; & Lambert, Loiselle, & Macdonald, 2009b). The five information seeking patterns identified include three active information

seeking patterns: (1) intense seeking of detailed information, (2) complimentary seeking of "good enough" cancer information, and (3) fortuitous information seeking mostly from other individuals diagnosed with cancer. The two minimal information seeking patterns are (4) limited interest in cancer information with minimal information seeking, and (5) guarded information seeking behavior with avoidance of certain types of cancer information. This more dimensional conceptualization of health information seeking behavior represents a possible framework for the development of new tools to measure information seeking preferences in individuals diagnosed with cancer, and for future investigations of information seeking in cancer populations.

4.2.2 The relationship between coping style and preferred level of involvement in treatment decision making

Neither monitoring, nor blunting predicted significant variance in participants' preferred level of involvement in treatment decision making.

One possible explanation for this result is that preferred level of involvement in treatment decision making, unlike information preferences, is not related to any underlying style of coping with medical threats. It is also true that the amount of information individuals endorsed wanting in order to help with their treatment decision is not correlated with the amount of control they report wanting in making their treatment decision.

Another possibility is that this question may suffer from range restriction. There is a trend in medical decision making to have individuals more actively involved in making their treatment decision and few individuals (only 3.9%) reported preferring a passive role in treatment decision making with their urologist (see table 22 for more detail).

4.2.3 Distinguishing monitoring and blunting

Monitoring and blunting are conceptualized as separate dimensions in the literature. From a theoretical standpoint, monitoring is characterized as a tendency to cognitively elaborate on a medical threat, including seeking information about that threat. Blunting, in contrast, is characterized by actively avoiding the medical threat and threat-related stimuli. However, past literature tends to treat monitoring and blunting as though they are opposite end of the same dimension (for example, confounding results for high monitors with those of low blunters). Prior to the current project, there was limited empirical investigation as to whether there is any meaningful difference between blunting and monitoring (i.e. high monitors may be characterized by the same traits as low blunters). One of the secondary aims of the current project was to investigate whether the theoretical distinctions between blunting and monitoring translate into 'real-world' differences.

Results from the current study support statistical distinctions between monitoring and blunting. Analyses indicate that monitoring and blunting are not correlated (either at time 1, r = 0.084, p > 0.05, n = 127; or time 2, r = -0.028, p > 0.05, n = 96), supporting the assertion that they are separate constructs. Beyond this, monitoring and blunting were not differentially related to information preferences and this raises questions about the construct validity of blunting.

Although anxiety and depression are correlated (both at time 1 and at time 2), depression and anxiety change differentially over time, and monitoring and blunting may have different influences on this change. It may be that, at the time of prostate cancer diagnosis, anxiety is reactive to a particular style of coping with a specific situation, and more likely to fluctuate with changing circumstances. Depression, on the other hand, when present, seems to more often be sustained over time, and perhaps more related to underlying personality factors and less dependent on a coping style specific to medical threats.

This suggests that monitoring and blunting are two separate dimensions, and not just opposite ends of a single spectrum (i.e. scoring high on measures of blunting is not equivalent to scoring low on measures of monitoring in terms of the relationship of these coping styles to anxiety and depression). The results of the current study indicate noteworthy problems with the blunting construct. Though blunting was significantly correlated with information preferences, the direction of this relationship was opposite to that expected (similar to those scoring relatively high on monitoring, blunters preferred relatively more information at the time of their diagnosis). This finding calls into question the construct and criterion validity of blunting. No information was unearthed here by using the blunting scale that was not already learned by using the monitoring scale which in turn has notably higher reliability.

4.3 The relationship between coping style, intolerance of uncertainty, and distress

Intolerance of uncertainty (IUS) was not significantly predictive of time 2 anxiety. The unadjusted IUS variable predicted significant variance in time 2 depression. However, analyses using the IUS variable adjusted to have no semantic overlap with items targeting anxiety on the PSSCAN did not predict significant variance in time 2 depression. Intolerance of uncertainty did not predict significant additional variance in time 2 depression over and above the effect of coping style, and IUS did not mediate the effect of monitoring on distress.

It may be that IUS was not predictive of anxiety at time 2 because levels of anxiety in men newly diagnosed with prostate cancer in general, and in the current sample, are relatively low. For few individuals with clinical levels of anxiety (e.g. in generalized anxiety

disorder) high anxiety may be sustained in day-to-day life over extended periods of time. For most individuals, anxiety, when present, decreases relatively quickly. This was the case in the current study where mean anxiety significantly decreased between time 1 and time 2. In the current study, anxiety, when present, may be an acute reaction to a medical threat, and may decrease with uncertainty reduction strategies (e.g. information seeking), and treatment decision making, over time.

The aim of adjusting the IUS variable was to remove any part of the variable that may have been measuring anxiety, rather than intolerance of uncertainty. Both the adjusted and unadjusted IUS variables were correlated with time 1 anxiety and change in anxiety over time. However, no causal predictive test indicated a relationship between IUS and anxiety. If IUS had worrying overlap with anxiety, then it would be expected that the unadjusted IUS variable would be predictive of time 2 anxiety. Because this wasn't the case, it is unclear how to interpret the adjusted IUS variable (it is unclear what variance is being removed in adjusting the IUS variable).

The unadjusted IUS variable significantly predicts depression at time 2 follow-up. Depression, in contrast to anxiety, which is more reactive to specific situations, has more of a trait-like quality. In the current study depression means did not significantly change between time 1 and time 2. Because depression tends to endure longer than anxiety, this may partially explain the stronger relationship of IUS to depression at time 2, when no relationship with anxiety was found. Uncertainties may be present for men at the time of their treatment, particularly if they have chosen to be placed on active surveillance programs, but may also be present regardless of which treatment they choose. For men in the acute recovery stages of radical prostatectomy, or embarking on a course of brachytherapy, there is uncertainty in the

effectiveness of the treatment, as well as the extent of side effects and how these will impact quality of life. For some men these uncertainties may make them vulnerable to symptoms of depression. Results of the current study support the assertion that intolerance of uncertainty at least partially underlies men's depression at the time of their treatment.

4.4 Predictors of treatment choice

Men newly diagnosed with prostate cancer often have several traditional treatment options available to them (e.g. radical prostatectomy, brachytherapy, etc.), and each treatment has its own unique set of sexual, bowel, and urinary side effects. Alternately, men can opt to enter an active surveillance treatment program. These programs involve ongoing monitoring of cancer growth indicators, followed by aggressive treatment if cancer shows significant signs of growth. A main advantage of active surveillance over active treatment is the (possibly indefinite) delay of the quality of life-decreasing side effects associated with active treatment, without compromising on mortality. There is also an advantage to the health care system in terms of reduced costs, as a significant proportion of men diagnosed with prostate cancer will never experience cancer growth that reaches criteria necessitating intervention with active treatment, thus reducing costs associated with these expensive treatments. For these reasons, many researchers in the field feel that active surveillance is a good option for men. However, relatively few men choose this treatment option. A second aim of the current study was to identify potential barriers to, and predictors of men's choosing active surveillance as an acceptable treatment option.

Participating in an active surveillance monitoring program requires a patient to tolerate the uncertainty surrounding potential cancer growth, the often protracted (and possibly indefinite delay before active treatment), and the uncertainty surrounding ongoing

screening procedures to track cancer growth (i.e. PSA testing and biopsies). For this reason, intolerance of uncertainty was hypothesized to be an important variable predicting men's treatment choice such that those individuals lower in intolerance of uncertainty would be relatively more likely to choose active surveillance as an acceptable treatment option.

Interventions to address the sexual, bowel, and urinary side effects of active treatments for prostate cancer have met with limited acceptability and success. However, effective interventions do exist to help individuals with anxiety, and to tolerate uncertainty. If anxiety or intolerance for uncertainty was found to be an important factor in study participants choosing active treatments over active surveillance, these psychological interventions may provide an alternative way for men to address concerns surrounding their cancer diagnosis, instead of addressing these concerns by engaging in active treatments such as surgery or brachytherapy, which result in side effects that will likely decrease their quality of life.

No study variable under investigation was found to be predictive of treatment choice and this cannot be explained by lack of statistical power. The fact that intolerance of uncertainty was not found to predict a significant amount of variance in treatment choice, despite the fact that participants varied considerably in their preferred level of involvement in making a treatment decision with their physician, and that a minority of participants endorsed preferring a relatively passive role (see table 21 for more details), may speak to the strength of the specialist recommendation in influencing participants' treatment choice (Diefenbach, et al., 2002). Also consistent with this explanation, in the current study, where specialists were all urologists (many of whom preformed radical prostatectomies), participants strongly preferred radical prostatectomy over other treatment options (see table 22 for more details).

The mechanisms through which physicians exert influence over participants' treatment decisions in the context of low risk prostate cancer diagnosis are not yet established. However, broader empirical investigation into physician-patient communications in cancer is a growing body of work. Review of the communication goals and needs of individuals diagnosed with cancer and their care providers identifies two main categories of goals. The first category is the optimal medical management of the patient, including discussions about disease status and treatment plan. The second goal is attention to the individual's psychosocial response to cancer (Hack, Degner, & Parker, 2005). Although the two goals are related in that communication quality influences individual's psychosocial health outcomes (Stewart, 1995), and communication outcomes are enhanced when physicians attend to patient's emotional needs (Hack, Degner, & Parker, 2005), treatment decision making falls into the first category of communication goals. Literature review does indicate that physicians tend to dominate physician-patient interactions, and the extent to which physicians encourage patient participation in communication may depend on physician characteristics (Hack, Degner, & Parker, 2005). Physicians are likely more knowledgeable about their own specialty compared to other treatments, and may talk more about, or impart more information regarding their own treatment specialty. These physician characteristics represent possible factors that could influence individuals in making treatment decisions. Patient characteristics such as feelings of autonomy and control may also be important factors in the physician-patient interaction (Hack, Degner, & Parker, 2005). Contextual factors such as patient disease characteristics, volume of individuals treated, and time spent in treatment consultation may also be relevant. Further study could more closely investigate

such physician and patient characteristics to discover the predictive value of these factors, and others, in influencing men's treatment decisions.

4.5 Masculinity

Perhaps not surprisingly, results from qualitative study indicate that men newly diagnosed with prostate cancer have concerns related to masculinity (Bokhour, Clark, Inui, Sillman, & Talcott, 2001). Care was taken in the current study to choose measures that would be appropriate for men. The Miller Behavioral Styles Scale was originally validated on a sample of men and women (Miller, 1987), and despite being widely studied in female medical samples (e.g. Schwartz, Lerman, Miller, Daly, & Masny, 1995), Miller and colleagues consider the MBSS is to be valid for male research participants (Miller, Rodoletz, Schroeder, Mangan, & Sedlacek, 1996; Miller, Brody, & Summerton, 1988). Additionally, informal pilot testing was used at the start of data collection to be sure that men could relate to each of the four scenarios under study. The Psychosocial Screening Instrument for Cancer has been used extensively with men (Vodermaier, Linden, MacKenzie, & Greig, 2010), and no significant gender differences have been reported in responding to the Intolerance of Uncertainty Scale (Buhr and Dugas, 2002). Despite this, concerns have been raised in the literature about the about ability of researchers to adequately capture men's specific experiences, and some researchers advocate for the development of specific questionnaires for use with male populations. It is certainly possible that there are aspects of men's coping, distress, and treatment decision making that are not being tapped by the questionnaires used in the current study. However, as of yet, no male-specific measures that were equal in their psychometric properties to those included in the study design were identified. Future research could work toward this end.

4.6 Subjective impressions

In order to effectively capture the factors that may influence the treatment choices of men diagnosed with early stage prostate cancer, it is not only important to target patient variables (i.e. the variables targeted in the current study), but, in future research, it will also be important to target contextual variables of the treating environment (e.g. appointment wait times, how busy the clinic is), variables related to the treating physician (especially physician biases and communication styles), and variables related to the physician-patient interaction (e.g. the amount and quality of contact and communication between the patient and treating physician). Collecting data from clinical samples in hectic clinical settings is difficult for a variety of reasons. Anecdotal evidence gathered from my own time collecting data in the Prostate Center at Vancouver General Hospital, as well as from consulting with researchers working in similar environments in other large Canadian cities, identifies several barriers to collecting data in general, and especially data related to physician variables, and data related to the patient-physician interaction.

Collecting data in the current study was a challenge due both to the extremely busy treatment environment (which made it difficult to locate potential study participants in the clinic), as well as to the treating urologists' varying attitudes and levels of acceptance toward psychological research. Female researchers working in this predominately male environment face unique challenges regarding fitting into the 'culture' of the office, and breaking free of established hierarchical hospital structures where historically men more often fill positions of power (e.g. physicians and senior administrators) and women more often fill service positions and supportive roles (e.g. nurses and administrative supports).

Possible barriers that may prevent data collection regarding physician factors and physician-patient interactions may include physicians being reluctant to actively take part in research or being reluctant to record or allow another person to observe the care they provide. Although some reluctance is likely due to physicians' time being scarce, fear of judgment or even litigation may also represent barriers. For these reasons, comprehensive investigations would be very challenging.

4.7 Novel scholarly contributions

The current study represents the first large, quantitative, and longitudinal study to date that investigates the contribution of individual differences in psychological variables to the psychosocial needs of men newly diagnosed with prostate cancer, related to diagnosis and treatment decision making. It is the only study that investigates monitoring and blunting coping styles, and intolerance of uncertainty in this particular population. Study findings indicate that intolerance of uncertainty may be related to men's experience of depressive symptoms approximately four months following diagnosis, at the time of treatment, and confirm that monitoring coping style is positively and significantly predictive of information preferences at the time of diagnosis. Findings also indicate that the time course of anxious and depressive symptoms in newly diagnosed participants is different, such that anxiety symptoms, when present, decrease with time or distance from diagnosis, while depression symptoms are more sustained. Patient factors such as demographics, coping style, intolerance of uncertainty, anxiety, and depression are not predictive of participants' treatment choices, and results strongly suggest that in order to comprehensively study men's treatment decision making, physician variables, and variables related to the patient-physician interaction must be taken into account.

4.8 Implications

Increases in early prostate cancer screening in an aging population have resulted in large numbers of men being diagnosed with prostate cancer at early stages of their disease. There may be several appropriate active treatment options for otherwise healthy men diagnosed with early stage disease. Active surveillance is an alternative to traditional active treatments and their inevitably associated urinary and sexual side effects. However, uptake of active surveillance may result in psychological distress resulting from choosing to not remove a growing cancer from the body; and surrounding screening procedures associated with monitoring cancer growth. Not surprisingly, the time of cancer diagnosis can be stressful, and there is inter-individual variability in reactions to, and needs surrounding diagnosis. The two main clinical aims of the current study were to inform the development of a screening package that would be useful in identifying individuals' psychosocial needs regarding their cancer diagnosis and treatment decision making, and to identify barriers and predictors of participants choosing active surveillance as a treatment option.

To date, there is a gap in the literature regarding the influence of psychological characteristics such as cognitive coping style (including monitoring) on the behaviors and psychosocial needs of men newly diagnosed with prostate cancer. These behaviors and needs include information-seeking, preferred level of involvement in treatment decision making, and psychological distress at the time of prostate cancer diagnosis, and after a treatment decision has been made. There is also a gap in the literature regarding the influence of individual differences in intolerance of uncertainty on treatment choice (including uptake in active surveillance), and depression and anxiety after a treatment decision has been made.

in medical treatment-related decisions. Researchers and clinicians may assume that provision of information will always facilitate treatment decision making, and that individuals all want and need similar amounts of information, and want to be actively involved in their care. This "more is better" approach to information provision is at least in part a reaction to, and an improvement on, out-dated philosophies of decision making in cancer care, which excluded individuals from the decision making process in an attempt to protect them. However, support from past research (reviewed above) and the current study indicates that not all individuals want to access the same amount of information or participate in treatment decision making to the same extent.

The results from this study aimed to inform screening procedures for men newly diagnosed with prostate cancer to ensure that their individual psychological and informational needs are best met, and to assist health care professionals in further refining clinical practice to be sensitive and respectful of men's needs as they navigate their treatment-decision, and the complexities of their cancer care.

In general, cancer care centers have been slow to adopt screening procedures for the psychosocial needs of their patients. The possible reasons for this are multifaceted. Screening has associated costs to hospitals, health care providers, and to individuals receiving health care. There is a significant financial commitment associated with screening procedures. Clinics may lack clinicians with appropriate training to screen individuals, or busy clinicians may not have enough time to screen individuals. Some clinicians may be reluctant to screen individuals because they lack information about appropriate referrals for individuals who are in need of additional resources, or appropriate referral resources do not exist. Individuals may hold beliefs, or institutions may mandate in their policies, that the specialized services

they provide encompass the medical, but not the psychosocial needs of their patients, or that individuals receiving care should be responsible for advocating for themselves in terms of accessing additional resources. Screening at the time of diagnosis may also mean an additional time and paperwork burden for individuals who may already be feeling confused, distressed, and overwhelmed.

However, screening for men's psychosocial needs (either mental health or information needs) at the time of cancer diagnosis also has several potential benefits for men diagnosed with prostate cancer, and health care systems. The early identification of distressed men, or the identification of men at increased risk for experiencing distress later on, can lead to early intervention and decreased distress; also minimizing longer-term costs to the health care system (i.e. fewer follow-up appointments and phone calls). Men who receive early intervention and access to appropriate resources may not only experience less distress resulting from their diagnosis, but also less distress secondary to frustrations experienced trying to navigate a confusing and unfamiliar health care system independently. In this way screening for men's psychosocial needs can benefit men in both the short and long term. Following from this, screening at the time of cancer diagnosis, and following provision of resources for in-need individuals, will also minimize longer-term costs to the health care system. The initial monetary investment involved in adequately screening for men's psychosocial needs is offset by the benefit of minimizing possible escalation of patient distress, and the associated costs of these increased patient needs. Screening procedures make good business sense and are congruent with patient-centered care.

One way to minimize the burden of screening for the psychosocial needs of individuals newly diagnosed with cancer at the administrative, clinician, and patient levels,

while at the same time maximizing the potential benefits of screening, is to increase the efficiency of the screening procedures. Ideally, a screening procedure would minimize the time and work burden for both individuals seeking care, and clinicians, while maximizing the potential for existing psychosocial resources that are available for individuals to be utilized in a logical and efficient way (e.g. provision of resources can be individualized to patient needs, and individuals can be connected with resources in a timely manner that maximizes their potential benefit).

Questionnaire-based screening methods, like those investigated in the current study, are more cost effective than interview-based methods. Pencil and paper, or computerized screens are advantageous, because they can generally be incorporated into existing hospital procedures (e.g. another questionnaire can be added to the stack of paperwork that individuals are already completing before an appointment at a clinic), and because they do not require staff with special training in order to administer them. These questionnaires can be interpreted later on, and individuals meeting specific cut-offs can then be referred to appropriate services. The algorithm for arriving at a cut-off score could include information about hospital funding and resources available to address the needs of individuals once they are identified. Another way that paper work can be minimized and screening can be made more efficient is to screen for patient characteristics that may underlie more than one area of potential need.

In the current study, coping style in men newly diagnosed with prostate cancer was hypothesized to provide important information, such that individuals scoring high on monitoring were expected to have relatively greater information preferences and desire a more active level of involvement in making a treatment decision with their physician. Coping

style information was also hypothesized to partially underlie distress experienced by men not only at the time of treatment decision making, but also over time, where blunting was hypothesized to be an effective short term, but ineffective long term strategy to minimize distress. If this were the case, screening men newly diagnosed with prostate cancer for coping style had the potential to provide information about a number of different areas of patient need, thus streamlining the screening process both for health care recipients and clinicians. Namely, data regarding men's coping style would indicate to clinicians men's information preferences, preferred level of involvement in treatment decision making, and risk of psychological distress both at the time of diagnosis, and after a treatment decision had been made. With this information, clinicians can more efficiently conduct further assessment in specific domains of need with specific individuals, and connect individuals to the informational and psychological resources they required. In turn, efficiently connecting individuals to these resources could have further preventative benefits in circumventing patient distress secondary to frustration from not accessing needed resources. As time and money are limited in hospital environments, and individuals who are more distressed will require increased access to hospital resources over time, monitoring coping style was a candidate for a potentially useful target for screening. Such screening would be efficient and cost-effective in meeting patient needs related to diagnosis and treatment decision making, and to maximize the benefit of resources available to individuals. Unfortunately, study results indicate very limited empirical support for including monitoring in screening packages for men newly diagnosed with prostate cancer.

Despite unexpected results, this study provides clinically relevant information. This information may be useful in guiding future investigations aimed at developing screening

packages to address men's psychosocial needs related to their diagnosis and treatment decision making. This information is summarized below.

1. Individuals newly diagnosed with prostate cancer prefer varying amounts of information in order to make a treatment decision, and prefer varying levels of involvement in making their treatment decision with their physician. Although previous research indicates that men within eight weeks of their prostate cancer diagnosis benefit from an information intervention in terms of increased satisfaction with cancer information received compared to a usual care control group (Loiselle, & Dubois, 2009), there is individual variability in the type and amount of information individuals prefer following their diagnosis in order to make a treatment decision (Lambert, Loiselle, & MacDonald, 2009a; Lambert, Loiselle, & MacDonald, 2009b). The current study supports the finding that there is individual variability in the amount and type of information that different individuals prefer following diagnosis with early stage prostate cancer, and in order to make a treatment decision. Similarly, there is variability in the degree of active involvement that individuals report to prefer in making a treatment decision with their physician. In general, older individuals prefer less information, and a less active role in treatment decision making compared to younger individuals. Because of this variability, in order to meet individuals' psychosocial needs, it is important that clinicians screen for patient information preferences, and not assume that all individuals will benefit equally from similar types and amount of information, or similar levels of involvement in making treatment decisions.

2. *Men's treatment decisions may be influenced by their physicians in non-obvious ways.* Despite the fact that most individuals report preferring an active or collaborative role in making their treatment decision with their physician, men may be strongly influenced by

specialist opinion. Prior research indicates that specialists more often recommend their own treatment specialty. This result is consistent with results of the current study in that the majority of participants choose radical prostatectomy as their treatment preference. Specialist recommendations are based on both research and their own clinical opinion. Participants may not realize the difference between research and clinical opinion, or that different practitioners even within the same specialty may have different recommendations for them. The current study did not identify any variables that predicted significant variance in participants' treatment choice. The ways in which specialist recommendation of specialists' biases), and other factors that influence treatment choice, including the identification of factors that prevent or motivate individuals to choose active surveillance as their treatment, may be a fruitful area for future research. If a patient prefers a more active role in making their treatment decision, they could be encouraged to seek the opinion of multiple specialists.

3. Until a time when there is empirical support for the utility of a single variable in predicting variance in multiple areas of potential psychosocial need for individuals, it is necessary to screen for distress and information preferences separately and repeatedly. In order to increase the efficiency of psychosocial screening procedures, it would be useful to identify a coping style variable that provided information about patient information preferences, as well as information about individuals who may be at risk for experiencing depression and anxiety. Results from the current study do not support that coping style operationalized as monitoring and blunting are such variables. Neuroticism, or individual differences in negative response to threat, frustration, or loss, is one trait that has been proposed to have wide ranging significance for public health as it predicts a number of

physical (i.e., mortality in cancer) and mental (i.e., anxiety and depression) health problems. Neuroticism has been proposed as a risk factor for health outcomes, and screening for this trait may be useful in identification of at-risk individuals to facilitate early psychological intervention (Lahey, 2009). Further research of such higher order variables, or other coping variables, may continue the search for appropriate variables to include in screening packages for men newly diagnosed with prostate cancer.

4. Even individuals preferring similar types and amounts of information may prefer this information for different reasons, or cope with it in different ways. Despite the fact that no support was found to screen individuals for coping style operationalized via monitoring and blunting as a proxy for information preferences and distress, results do indicate that monitoring coping style does predict significant variance in information preferences such that individuals scoring high on monitoring prefer more, and more different types of informational support. Further, contrary to previous research and prediction, study results indicate that blunting predicts information preferences over and above monitoring such that individuals scoring high on blunting prefer more information as well. Individuals scoring high on monitoring and individuals scoring high on blunting may prefer relatively more information for different reasons, or prefer different types of information. (For example, individuals scoring relatively high on blunting may prefer more information about topics they find less threatening). But despite this, results indicate significant problems with the construct and criterion validity of the blunting variable in terms of its relationship to information preferences. In general, results suggest that clinicians can not assume that all individuals will approach the information they are provided with in the same way. These fine-grained individual differences in information preferences may be a fruitful area for

future research aimed at improving psychosocial care for newly diagnosed men with low risk prostate cancer.

5. Distress screening is important, and anxiety and depression must be screened for separately throughout the cancer trajectory. Results suggest that anxiety and depression, when present in participants newly diagnosed with prostate cancer, change differentially over time. The data suggest that intolerance of uncertainty may underlie depression when present four months following diagnosis. A growing body of literature supports the assertion that once clinical risk factors are accounted for specific psychological distress factors such as depressive symptoms are predictive of survival outcomes in heterogeneous cancer populations (Satin, Linden, & Phillips, 2009; Brown, Levy, Rosberger, & Edgar, 2003). It is important to screen for patient distress throughout the cancer trajectory, and it is important to screen for anxiety and depression separately.

6. No evidence was found that intolerance of uncertainty, or other study variables, are factors that significantly influence participants' treatment choices. Contrary to hypotheses, the independent variables of interest (i.e. coping style, intolerance of uncertainty, anxiety, and depression) and demographic variables investigated in the current study do not provide information about participants' decision to engage in a traditional, or monitoringtype treatment. In light of the fact that physician recommendation has a large impact on individuals' treatment choices, and because other factors that are implicated in men's choice between active treatment and active surveillance are yet unknown, specialists need to be cautious in their consultations with men who prefer an active role in treatment decision making to differentiate between established fact and their own opinions. Identification of alternative patient and physician factors (and patient-physician factors) that may present

barriers to men's uptake of active surveillance is a potentially fruitful area for future research that may clarify why this treatment option is under-utilized.

4.9 Limitations and conclusions

A particular strength of the design of the current study is its longitudinal nature, which allows examination of temporal ordering and prediction of variables of interest. In particular, the finding that intolerance of uncertainty predicts depression at time 2, and the finding that anxiety and depression change differentially over time, could not have emerged from a purely cross-sectional study design. The finding that blunting no longer predicts significant variance in time 2 anxiety when controlling for anxiety at time 1 could also not have emerged from a purely cross sectional design. A longitudinal design was necessary in order to have the potential to identify variables that could increase the efficiency of screening procedures for newly diagnosed men, by providing information about variables that were related to multiple areas of patient need at two different time points. Inclusion of a difficult to access clinical population is another strength that lends weight and credibility to the study results.

The main limitation regards the generalizability of study results. The participant sample in the current study is composed of men newly diagnosed with prostate cancer at an urban cancer care facility that sees men from throughout British Columbia. Although there was a high rate of agreement for participation in the study, a minority of all newly diagnosed men at the cancer centre was referred for participation in the study, and the exact rate of referral is unknown. Referrals for study participation were at the discretion of the attending urologist. Although the clinic where recruitment took place sees men from throughout British Columbia, and although demographic study makeup was similar to previous similar research

samples, the study results are limited in terms of their generalizability beyond the demographic makeup of the study sample reported in the results section, and also limited to the individuals that were referred for study participation.

Another consideration regarding the generalizability of the study results regards patient information preferences. In the current study it was found that monitoring (and surprisingly, blunting as well) were both predictive of relatively greater information preferences at the time of diagnosis. The list of information resources presented to participants was comprehensive, including information presented in different formats (e.g. via written information, via web-based resources, via DVD, and via appointments with varying clinicians), and information relevant to a variety of areas of potential patient need (e.g. information regarding treatment options, complimentary and alternative medicine, and coping with treatment side effects). This list reflected the variety of resources that were available to individuals through the Prostate Center at Vancouver General Hospital. In this way, the study was designed to maximize the potential of providing information that was directly relevant to men diagnosed with prostate cancer, clinicians working in this center, and other community clinics that have access to similar resources. However, the information resource list was not completely exhaustive of all potential resources. This limits the generalizability of study results related to information preferences operationalized via tally of the different resources that study participants endorsed preferring to the specific center where data was collected, and other centers with access to similar resources. In the current study patient information preferences were also operationalized via a global, non-specific, Likerttype measure (ranging from 'none' to 'a great deal'). This measure of patient information preferences is not specific to the resources available in the Prostate Center, and the results
relating to this measure are more widely generalizable. Importantly, study indicates that the results of analyses using the list outcome and global outcome were similar, supporting the generalizability of study results related to patient information preferences. Because both the site-specific list, and the global measure provide different, but important clinical information, it may be beneficial for future research to include both types of measures.

Another limitation of the current study is that we can not test the influence of information provision tailored to patient preferences on outcomes. Although the researchers and clinicians involved in this study made every effort to provide participants with every information resource they endorsed preferring, the availability of certain resources in the Prostate Center varied over the three years of data collection. There was therefore no systematic provision of information to match patient preferences. This is not an intervention study.

Not all study results will readily generalize to other cancer populations. The finding that monitoring was positively and significantly associated with information seeking is a robust finding in the field, and the current study provides further support to this growing area of literature. A growing body of literature also supports the finding that individual's depression and anxiety change differentially over time. In contrast, other study findings may be unique to men newly diagnosed with prostate cancer. Unique features of this population include relatively good prognosis, and the fact that several treatment options may be equally appropriate, and that because of this a treatment decision must be made. Although all cancer diagnoses involve many uncertainties, there are uncertainties specific to uptake of active surveillance that are other unique features of this population. For this reason the study result that intolerance of uncertainty may underlie time 2 depression in men newly diagnosed with prostate cancer may not generalize to other cancer populations.

Finally, it is possible that demand characteristics may have influenced participants' responses to questionnaire data. For example, participants may have been motivated to endorse preferring a more active role in making a treatment decision with their physician, or to endorse preferring relatively increased informational resources due to the social desirability of these responses. Along these lines, in many cases study participants completed time 1 questionnaires in the presence of their partners. As time 2 questionnaires were completed via mail out, it is possible that partners were present during completion. The interpretation of study results is limited by the extent to which study respondents completed questionnaires honestly and independently.

The current study aimed to determine the usefulness of screening individuals newly diagnosed with prostate cancer for monitoring and blunting coping style and intolerance of uncertainty in providing information about patient information preferences, preferred level of involvement in treatment decision making, distress and treatment choice. Results indicate limited support for including these constructs in screening packages, but point to the overall importance of screening newly diagnosed cancer individuals in order to identify and address their psychosocial needs surrounding diagnosis and treatment decision making. Benefits to screening include being better able to provide individuals with care that meets their individualized needs, and potentially reducing longer-term costs to the health care system.

99

Demographics

	Baseline Data	4-Month Data	Baseline Data
		(only individuals	(for drop outs
		who completed	only)
		their time 2	
		questionnaires)	
Total Sample	n = 127	n = 96	n = 31
	M (SD) /	M (SD) / Range	M (SD) /
	Range		Range
Age (years):	62.40 (7.79)/	62.76 (7.58)/ 45-	62.00 (8.64)/
	44-79	80	45-77
		n = 75	
	n (% total)	n (% of total	n (% of total
		time two	drop outs)
		respondents)	
Education:			
Less than High School	6 (4.7)	6 (6.3)	0
Diploma			
High School Diploma	25 (19.7)	18 (18.8)	7 (22.6)
Trade/Community College	35 (27.6)	23 (24.0)	12 (38.7)
Certificate			
Undergraduate University	34 (26.8)	26 (27.1)	8 (25.8)
Degree			
Graduate Degree (Masters,	27 (21.3)	23 (24)	4 (12.9)
Ph.D., M.D., etc.)			
Employment:			
Working full-time	60 (47.2)	46 (47.9)	14 (45.2)
Looking for a job	4 (3.1)	3 (3.1)	1 (3.2)
Working part-time	10 (7.9)	8 (8.3)	2 (6.5)
Retired	53 (41.7)	39 (40.6)	14 (45.2)
Relationship Status:			
Single	9 (7.1)	7 (7.3)	2 (6.5)
Married / living with partner	104 (81.9)	79 (82.3)	25 (80.6)
Divorced / separated	10 (7.9)	7 (7.3)	3 (9.7)
Widowed	4 (3.1)	3 (3.1)	1 (3.2)

	n (% total)	n (% of total	n (% of
		time two	total drop
		respondents)	outs)
Ethnicity:			
Caucasian/white	111 (87.4)	84 (87.5)	27 (87.1)
Black	1 (0.8)	1 (1.0)	0
Chinese	4 (3.1)	3 (3.1)	1 (3.2)
Japanese	1 (0.8)	1 (1.0)	0
Korean	1 (0.8)	1 (1.0)	0
South East Asian (e.g.,	2 (1.6)	3 (3.1)	3 (9.7)
Vietnamese, Filipino)			
Other:			
Persian	1 (0.8)	1 (1.0)	0
Iranian	1 (0.8)	1 (1.0)	0
Jewish	1 (0.8)	1 (1.0)	0
Income:			
Less than \$30,000	7 (5.5)	3 (3.1)	4 (12.9)
\$30,000 - \$49,999	19 (15.0)	14 (14.6)	5 (16.1)
\$50,000 - \$69,999	19 (15.0)	14 (14.6)	5 (16.1)
Greater than \$70,000	73 (57.5)	57 (59.4)	16 (51.6)
Do not wish to answer	9 (7.1)	8 (8.3)	1 (3.2)

Disease characteristics

		Baseline Data	4-Month Data (only	Baseline Data (for drop outs only)
			completed their	arop outs only)
			time 2	
			questionnaires)	
Total Sample		n = 127	n = 96	n = 31
Characteristic		Mean (SD) /Range	Mean (SD) /Range	Mean (SD) /Range
PSA		8.58 (17.91) /1.00-	6.85 (4.97)/ 1.00-	13.95 (35.06)/ 1.30-
		200.00	44.00	200.00
		without 1 outlier		without 1 outlier
		(PSA=200.00):		(PSA=200.00):
		7.06 (5.28)/ 1.00-		7.75 (6.19)/ 1.30-
		44.00, n = 126		35.72, n = 30
Characteristic		n (% total)	n (% total)	n (% total)
Clinical Stage (all 'Early'):			
la		1 (0.8)	1 (1.0)	0
1c		59 (46.5)	46 (47.9)	13 (41.9)
2a		46 (36.2)	31 (32.3)	15 (48.4)
2b		11 (8.7)	10 (10.4)	1 (3.2)
2c		10 (7.9)	8 (8.3)	2 (6.5)
Gleason Risk:				
Low		112 (88.2)	84 (87.5)	28 (90.3)
Modera	te	15 (11.8)	12 (12.5)	3 (9.7)
Previous Diagno	oses:			
No		118 (92.9)	89 (92.7)	29 (93.5)
Yes		9 (7.1)	7 (7.3)	2 (6.5)
	Testicular	1 (0.8)	1 (1.0)	0
	Skin	3 (2.4)	2 (2.0)	1 (3.2)
	Muscle	1 (0.8)	1 (1.0)	0
	Leukemia	2 (1.6)	2 (2.0)	0
	Adrenal	1 (0.8)	1 (1.0)	0
	Did not	1 (0.8)	0	1 (3.2)
	specify			

Stability of monitoring, blunting, and intolerance of uncertainty						
4-month stability	r	p (2-tailed)	n			
Monitoring:						
Total	0.51	< 0.01	96			
Subscales						
Dentist	0.52	< 0.01	96			
Terroris	t 0.29	0.005	95			
Layoff	0.37	< 0.01	96			
Airplane	e 0.53	< 0.01	96			
Blunting:						
Total	0.57	<0.01	96			
Subscales						
Dentist	0.49	<0.01	96			
Terroris	t 0.42	<0.01	95			
Layoff	0.62	<0.01	96			
Airplane	e 0.45	<0.01	96			
IUS	0.72	<0.01	85			

Correlations between monitoring and blunting, anxiety and depress							
	r	p (2-tailed)	Ν				
Monitoring and Blunting:							
Time 1	0.084	0.35	127				
Time 2	-0.028	0.79	96				
Anxiety and Depression:							
Time 1	0.53	<0.01	127				
Time 2	0.58	<0.01	96				

Time 1 Correlations of interest

	r	p (2-tailed)	n
Monitoring:			
Anxiety	- 0.14	0.13	127
Depression	- 0.067	0.46	127
Information preferences (global)	0.21	< 0.05	127
Information preferences (count)	0.38	< 0.01	127
CPS	0.01	0.93	127
Blunting:			
Anxiety	0.12	0.18	127
Depression	0.089	0.32	127
Information preferences (global)	0.23	<0.01	127
Information preferences (count)	0.23	0.01	127
CPS	-0.051	0.57	127
IUS:			
Anxiety	0.44	< 0.01	114
Depression	0.32	< 0.01	114
Information preferences (global)	0.076	0.42	114
Information preferences (count)	0.14	0.13	114
CPS	0.10	0.27	114
IUS (no anxiety):			
Anxiety	0.42	< 0.01	114
Depression	0.31	< 0.01	114
Information preferences (global)	0.082	0.39	114
Information preferences (count)	0.14	0.13	114
CPS	0.11	0.24	114

Table	6
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	r	p (2-tailed)	n
Time 1 Monitoring			
Time 2			
Anxiety	0.12	0.26	96
Depression	-0.036	0.73	96
Time 1 Blunting			
Anxiety	0.25	<0.05	96
Depression	0.15	0.14	96
Time 1 IUS			
Time 2			
Anxiety	0.12	0.27	85
Depression	0.25	<0.05	85
Time 1 IUS (no anxiety) Time 2			
Anxiety	0.12	0.27	85
Depression	0.24	< 0.05	85

Time 1 – Time 2 correlations of interest (independent variables with change scores in anxiety and depression)

	r	p	n
Time 1 Monitoring	-	٢	
Change in			
Change in		0.05	0.6
Anxiety	0.22	<0.05	96
Depression	0.19	0.060	96
Time 1 Blunting			
Change in			
Anxiety	-0.017	0.87	96
Depression	-0.027	0.80	96
Ĩ			
Time 1 IUS			
Change in			
Anxiety	-0.28	< 0.05	85
Depression	-0.12	0.29	85
201100000		0.22	
Time 1 IUS (no anxiety)			
Change in			
	0.20	0.05	05
Anxiety	-0.20	<0.05	83
Depression	-0.11	0.34	85

Effect size of change in anxiety and depression over time						
Variable	mean	sd	n	Cohen's d		
Anxiety:						
Time 1	7.49	2.75	127			
Time 2	6.52	2.19	96			
Effect size				0.39		
Depression:						
Time 1	6.68	2.29	127			
Time 2	6.79	2.38	96			
Effect size				0.047		

Effect size of change in anxiety and depression over time

Hie	rarchical linear	regression	investigating	whether	blunting	predicts	variance	in time	2
anx	iety								
-			-			- 2 -	2	()	

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variables:				
Health (days)	.14	1.36 (.18)		
Health (global)	29	-2.72 (.008)		
Total			.13	
Step 2				
Blunting	.23	2.36 (.021)	.18	.05 (.021)
n = 95				

Hierarchical linear regression investigating whether blunting predicts variance in time 2 depression

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variables:				
Health (days)	.18	1.68 (.096)		
Health (global)	15	-1.42 (.16)		
Total			.078	
Step 2				
Blunting	.14	1.38 (.17)	.097	.019 (.17)
n = 95				

Hierarchical linear regression investigating whether blunting predicts additional variance in information preferences (global measure) over and above monitoring

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Monitoring	.21	2.43 (.017)	.045	
Step 2				
Blunting	.22	2.53 (.013)	.092	.047 (.013)
n = 127				

Hierarchical linear regression investigating whether blunting predicts additional variance in information preferences (count) over and above monitoring

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variable:				
Age	20	-2.43 (.017)		
Monitoring	.39	4.77 (<.001)		
Total			.18	
Step 2				
Blunting	.17	2.10 (.038)	.21	.028 (.038)
n = 127				

Hierarchical linear regression investigating whether monitoring predicts variance in control preferences

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variable:				
Age	.18	2.04 (.043)	.032	
Step 2				
Monitoring	001	008 (.99)	.032	0 (.99)
n = 127				

Hierarchical linear regression investigating whether blunting predicts variance in control preferences

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variable:				
Age	.18	2.04 (.043)	.032	
Step 2				
Blunting	028	31 (.76)	.033	.001 (.76)
n = 127				

Hierarchical linear regression investigating whether IUS predicts variance in time 2 anxiety								
Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)				
Step 1								
Significant control variables:								
Health (days)	.23	2.02 (.046)						
Health (global)	14	-1.21 (.23)						
Total			.10					
Step 2								
IUS	.084	0.75 (.46)	.11	.006 (.46)				
n = 84								

Hierarchical linear regression investigating whether IUS predicts variance in time 2 depression

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variables:				
Health (days)	.20	1.73 (.088)		
Health (global)	16	-1.37 (.17)		
Total			.092	
Step 2				
IUS	.22	2.02 (.047)	.14	.044 (.047)
n = 84				

Hierarchical linear regression investigating whether IUS with no overlap with PSSCAN predicts variance in time 2 depression

Predictor	Beta	t (p)	\mathbb{R}^2	R ² change (p)
Step 1				
Significant control variables:				
Health (days)	.20	1.73 (.088)		
Health (global)	16	-1.37 (.17)		
Total			.092	
Step 2				
IUS	.21	1.88 (.063)	.13	.039 (.063)
n = 84				

Hierarchical linear regression investigating whether IUS predicts variance in time 2 depression over and above monitoring and blunting

Predictor	Beta	t (p)	\mathbf{R}^2	R ² change (p)
Step 1				
Significant control variables:				
Health (days)	.20	1.73 (.088)		
Health (global)	16	-1.37 (.17)		
Total			.092	
Step 2				
Monitoring	085	79 (.43)		
Blunting	.22	2.11 (.038)		
Total			.143	.050 (.10)
Step 3				
IUS	.21	1.91 (.060)	.18	.038 (.060)
n = 84				

Binary logistic regression results for continuous variables of interest predicting treatment choice (no predictor reached significance)

Predictor	% Correct				
Overall model	72.9				
Predictor	В	Exponent B (odds ratio)			
Age	.033	1.034			
Time 1 monitoring	035	.965			
Time 1 blunting	.102	1.107			
Time 1 IUS	.033	1.034			
Time 1 IUS (no anxiety)	062	.940			
Time 1 anxiety	.098	1.103			
Time 1 depression	002	.998			
Time 2 anxiety	.066	1.068			
Time 2 depression	211	.810			

n = 84

Binary logistic regression results for categorical variables of interest predicting treatment choice (no predictor reached significance)

Predictor	Frequency	В	(Exp(B))
Constant		6.188	486.796
Education:			
high school or less	23	644	.525
trade/ community college	21	-1.419	.242
university degree	25	-1.824	.161
graduate degree	16		
Employment status			
working full time/ part time/ looking for a job	50	664	.515
retired	35		
Income			
less than \$49,000 per year	15	369	.691
\$50,000-\$60,000 per year	14	-1.306	.271
greater than \$70,000 per year	48	341	.711
do not wish to answer	8		
Relationship status			
single/ divorced/ separated/ widowed	16	132	.876
married/ living with a partner	69		

n = 84

Frequency of participants' treatment choices	
Treatment Choice	Frequency (%)
Active Surveillance	26 (27.1)
Radical Prostatectomy	55 (57.3)
Brachytherapy	11 (11.5)
Radiotherapy	4 (4.2)
Total	96 (100)

Frequency of participants' endorsed preferred level of involvement in treatment decision making with their physician (ranging from relatively more active to relatively more passive)

Preferred Level of Involvement	Frequency (%)
I prefer to make the final treatment selection after	27 (21.3)
my urologist has given me my options.	
I prefer to make the final treatment selection after	44 (34.6)
seriously considering my urologist's opinion.	
I prefer that my urologist and I share responsibility	51 (40.2)
for deciding which treatment will be best.	
I prefer that my urologist makes the final treatment	0 (0)
decision after he seriously considered my opinion.	
I prefer that my urologist will make the final decision	5 (3.9)
about what treatment is best for me.	
Total	127 (100)



Study hypotheses fall into these four main areas: The relationship of coping style to anxiety and depression; the relationship of coping style to information preferences, and preferred level of involvement in treatment decision making; the relationships between monitoring, intolerance of uncertainty, and anxiety and depression; and the relationships of variables of interest to treatment choice.



- D. ? treatment choice



Anxiety and depression means at time 1 and time 2. There is a significant difference between anxiety means, but not between depression means.



Figure 3. Proposed mediational model

Proposed mediational model: Testing the significance of the mediation model of time 1 monitoring on time 2 anxiety and time 2 depression, through time 1 intolerance of uncertainty. Results were not significant.



Time 1 Monitoring _____ Time 2 Anxiety/ Depression

Figure 4. Main findings

The main significant relationships found in the study were that monitoring and blunting were both positively related to information preferences at time 1, and that intolerance of uncertainty was predictive of time 2 depressive symptoms.



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Appendix A – Time 1 questionnaires

Date:



IDN:_____

This information is strictly for research purposes and will remain anonymous.

1. What is yo	our date of	birth? (Y	YYY/MM/DD)
---------------	-------------	-----------	------------

2. How much school did you complete? (please check one)

Less than High School Diploma
High School Diploma
Trade/Community College Certificate
University Degree
Graduate Degree (Graduate – Masters, Ph.D., M.D., etc.)

3. Are you currently working at a paying job? (please check one)

	l
]

Yes, I am working full-time No, I am looking for a job No, I am disabled

	Y
	ľ

Yes, I am working part-time No, I am retired

4. Which of the following best describes your current relationship status? (please check one)

Sing
Mar
Dive
Wid

gle rried / living with partner orced / separated lowed

5. To which ethnic or cultural group do you most closely identify with? (please check one)



6. What is your annual **household** income? (please check one)

Less than \$30,000
\$30,000 - \$49,999
\$50,000 - \$69,999
Greater than \$70,000
Do not wish to answer

Information Preferences at Time of Diagnosis

1. Please check off all the information resources you have accessed since your diagnosis of prostate cancer:

1. None	7. Internet
2. Friend/relative	8. Television/radio
3. Talking to someone who has prostate cancer	9. Medical Journal
4. Pamphlets from doctor office	10. Video/DVDs
5. Other Doctors (type/s)	11. Newspaper/magazine
6. Attended a Prostate Support Group meeting	12. Other:

2. How much information would you like to access at this time to make a treatment decision (check one)?

None:_____ Minimal:_____ Moderate Amount:_____ Quite A Bit:_____ A Great Deal:_____

- 3. If you do want to access information, please indicate what types of information you would like to access at this time (check off all that apply)
- _____i) Package of written information (brochures, booklets)
- _____ii) List of suggested Internet sites and notes on how to assess reliability of Internet sites
- _____ iii) Information on how to access patient support groups in my area.
- _____iv) Watch a DVD on treatments of localized prostate cancer (24 minutes)
- _____v) Attend a group patient education session with a nurse specialist at the Prostate Clinic to discuss my treatment options, side effects of each treatment option, and advantages/disadvantages of each treatment option.
- _____vi) Referred to a family counselor to help me deal with the emotional distress I am feeling about my cancer diagnosis.
- _____vii) Attend a dietician lead group session to learn more about eating a prostate friendly diet.
- _____viii) Information on Complementary and Alternative Therapies (CAM).
- _____ ix) Learn more about clinical trials available to me at this time.
- x) An appointment with a sexual health nurse to discuss the impact of treatment on my future sexual function.

Monitor/Blunter Style Scale

- 1. Vividly imagine that you are **afraid** of the dentist and have to get some dental work done. Which of the following would you do? Check **all** of the statements that might apply to you.
 - ____ I would ask the dentist exactly what work was going to be done.
 - ____ I would take a tranquilizer or have a drink before going.
 - ____ I would try to think about pleasant memories.
 - ____ I would want the dentist to tell me when I would feel pain.
 - ____ I would try to sleep.
 - ____ I would watch all the dentist's movements and listen for the sound of the drill.
 - ____ I would watch the flow of water from my mouth to see if it contained blood.
 - ____ I would do mental puzzles in my mind.
- 2. Vividly imagine that you are being held hostage by a group of armed terrorists in a public building. Which of the following would you do? Check **all** of the statements that might apply to you.
 - ____ I would sit by myself and have as many daydreams and fantasies as I could.
 - ____ I would stay alert and try to keep myself from falling asleep.
 - ____ I would exchange life stories with the other hostages.
 - ____ If there was a radio present, I would stay near it and listen to the bulletins about what the police were doing.
 - ____ I would watch every movement of my captors and keep an eye on their weapons.
 - ____ I would try to sleep as much as possible.
 - ____ I would think about how nice it's going to be when I get home.
 - ____ I would make sure I knew where every possible exit was.

3. Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department at work will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about lay-offs has been made and will be announced in several days. Check **all** of the statements that might apply to you.

- ____ I would talk to my fellow workers to see if they knew anything about what the Supervisor's evaluation of me said.
- ____ I would review the list of duties for my present job and try to figure out if I had fulfilled them all.
- ____ I would go to the movies to take my mind off things.
- ____ I would try to remember any arguments or disagreements I might have had that would have resulted in the supervisor having a lower opinion of me.
- ____ I would push all thoughts of being laid off out of my mind.
- ____ I would tell my spouse that I'd rather not discuss my chances of being laid off.
- ____ I would try to think which employees in my department the supervisor might have thought had done the worst job.
- ____ I would continue doing my work as if nothing special was happening.

4. Vividly imagine that you are on an airplane, thirty minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well. Check **all** of the statements that might apply to you.

- ____ I would carefully read the information provided about safety features in the plane and make sure I knew where the emergency exits were.
- ____ I would make small talk with the passenger beside me.
- ____ I would watch the end of the movie, even if I had seen it before.
- ____ I would call for the flight attendant and ask what exactly the problem was.
- ____ I would order a drink from the flight attendant or take a tranquilizer.
- ____ I would listen carefully to the engines for unusual noises and would watch the crew to see if their behavior was out of the ordinary.
- ____ I would talk to the passenger beside me about what might be wrong.
- ____ I would settle down and read a book or magazine or write a letter

IUS

You will find below a series of statements which describe how people may react to the uncertainties of life. Please use the scale below to describe to what extent each item is characteristic of you. Please circle a number (1 to 5) that describes you best.

	Not at all Characteristic of me		Somewhat characteristic of me		Entirely characteristic of me
1. Uncertainty stops me from					
having a firm opinion.	1	2	3	4	5
2. Being uncertain means that a					
person is disorganized.	1	2	3	4	5
3. Uncertainty makes life					
intolerable.	1	2	3	4	5
4. It's unfair not having any					
guarantees in life.	1	2	3	4	5
5. My mind can't be relaxed if I					
don't know what will happen					
tomorrow.	1	2	3	4	5
6. Uncertainty makes me uneasy,					
anxious, or stressed.	1	2	3	4	5
7. Unforeseen events upset me					
greatly.	1	2	3	4	5
8. It frustrates me not having all					
the information I need.	1	2	3	4	5
9. Uncertainty keeps me from					
Living a full life.	1	2	3	4	5
10. One should always look ahead so					
as to avoid surprises.	1	2	3	4	5
11. A small unforeseen event can spoil					
everything, even with the best of					
planning.	1	2	3	4	5
12. When it's time to act,					
uncertainty paralyses me.	1	2	3	4	5
13. Being uncertain means that I am					
not first rate.	1	2	3	4	5
14. When I am uncertain, I can't go					
forward.	1	2	3	4	5
15. When I am uncertain I can't					
function very well.	1	2	3	4	5

	Not at all characteristic of me		Somewhat characteristic of me		Entirely characteristic of me
16. Unlike me, others always seem to					
know where they are going with their lives	1	2	3	1	5
17 Uncertainty makes me	I	4	0	-	5
vulnerable unbanny or sad	1	2	3	4	5
18 I always want to know what the	1		U	-	J
future has in store for me	1	2	3	4	5
10 I can't stand being taken by	1		U	-	J
surprise	1	2	3	4	5
20 The smallest doubt can ston me	1		0	-	0
from acting	1	2	3	4	5
21 I should be able to organize	1	-	0		U
everything in advance.	1	2	3	4	5
22 Reing uncertain means that I	1		v		U
lack confidence.	1	2	3	4	5
23. I think it's unfair that other	A	-	v	-	U
neonle seem sure about their					
future.	1	2	3	4	5
24. Uncertainty keeps me from	-	_	•	•	
sleening soundly.	1	2	3	4	5
25. I must get away from all	*	_	U	•	
uncertain situations.	1	2	3	4	5
26. The ambiguities in life stress me.	-		C	•	•
	1	2	3	4	5
27. I can't stand being undecided	_		-	-	-
about my future.	1	2	3	4	5

PSSCAN -Screening Tool

<u>*Part A*</u> Please respond to each question with a simple "Yes" or "No" by making a circle around the appropriate answer or by circling a number. There are no right and wrong answers.

1.	Do you live alone?	YES	NO	
2.	When you need help, can you count on anyone to help with daily tasks like grocery shopping, cooking, giving you a ride?	YES	NO	
3.	Do you have regular contact with friends or relatives?	YES	NO	
4.	Have you lost your life partner within the last few years ?	YES	NO	
5.	Can you count on anyone to provide you with emotional support?	YES	NO	
6.	Do you feel that you <u>want and need</u> this kind of emo	otional suppor	t ?	
	No, not at all 0 1 2 3 4 5 6 7	8 9 10) Very much	
Pa	<i>ITT B:</i> Please circle the number that best describes	how you feel:		
7.	Would you say that in general your health is			
	Very Poor <u>0 1 2 3 4 5 6 7</u>	8 9 10	Excellent	
8.	Would you say that in general your quality of life is			
	Very Poor <u>0 1 2 3 4 5 6 7</u>	8 9 1	<u>0</u> Excellent	

9. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

10. Now thinking about level of stress, depression, and problems with emotions, for how many days during the past 30 days was your mood not good?

11. During the past 30 days, for about how many days did poor physical or emotional health keep you from doing your usual activities, such as self-care, work, or recreation?

	Not at	A little	Moderately	Quite	Very much
	an	bit	30		30
12. <i>During the past week</i> I have felt that my heart races and I tremble.					
13. <i>During the past week</i> I have felt that I cannot control anything.					
14. <i>During the past week</i> I have lost interest in things I usually cared for or enjoyed.					
15. <i>During the past week</i> I have felt nervous and shaky inside.					
16. <i>During the past week</i> I have felt tense and can't relax.					
17. <i>During the past week</i> my thoughts are repetitive and full of scary things.					
18. <i>During the past week</i> I have felt restless and find it difficult to sit still.					
19. I have <i>recently</i> thought about taking my life.					
20. In the past year, I have had 2 weeks or more during which I felt sad, blue, or depressed.					
21. I have had 2 years or more in my life when I felt depressed or sad most days even if I felt o.k. sometimes.					

<u>Part C:</u> Please place an 'x' in the box that best describes what you have experienced

Preferred Role in Treatment Decision Making

1. a) Please select the **ONE** statement that best describes the role you would prefer to play in making a treatment decision with your **urologist**.

1. I prefer to make the final treatment selection after my urologist has given me my options

2. I prefer to make the final treatment selection after seriously considering my urologist's opinion.

- 3. I prefer that my urologist and I share responsibility for deciding which treatment will be
- 4. I prefer that my urologist makes the final treatment decision after he seriously considere opinion.
- 5. I prefer that my urologist will make the final decision about what treatment is best for me
- b) Please describe what this statement means to you:

2. Have you already made a preliminary treatment decision at this time (circle one answer)?

_ 1. No
 = 2. Yes (if yes, please check the treatment you have selected)
Active Surveillance (actively monitoring my condition)
Radical Prostatectomy (surgery)
Brachytherapy (seed implants)
Radiotherapy (external beam radiation)
Other:

Prostate Cancer Knowledge Questionnaire

TRUE or FALSE. Some of the statements below are true; some are false. Please circle **T** for each statement that you think is **TRUE**; circle **F** for each one that you think is **FALSE**.

1.	Transrectal Ultrasonography (TRUS) biopsies are able to identify the	Т	F
	presence of cancer in all areas of the prostate gland.		
2.	A higher Gleason score means that the cancer cells are less aggressive.	Т	F
3.	A clinical stage is an estimate of the extent of prostate cancer and how far it has spread.	Т	F
4.	The entire prostate gland and seminal vesicles are removed during a radical prostatectomy surgical procedure.	Т	F
5.	Cure means that the prostate cancer will never return.	Т	F
6.	All treatments for prostate cancer have an impact on current erectile function.	Т	F
7.	Brachytherapy radiation involves implanting tiny seeds into the prostate gland for a short period of time and then removing them.	Т	F
8.	Hormonal therapy is a common treatment used to treat prostate cancer that is confined to the gland.	Т	F
9.	Active surveillance may be considered as a reasonable way to manage prostate cancer that is low risk and confined to the prostate gland.	Т	F
10.	Following treatment, prostate specific antigen (PSA) tests are the most commonly used tests to determine if the prostate cancer has recurred or is progressing.	Т	F
11.	The PSA level decreases gradually after surgery.	Т	F
12.	The majority of participants may experience slight urine leakage following surgery.	Т	F
13.	Following surgery, there is no ejaculate fluid.	Т	F
14.	It is possible to transmit prostate cancer to partners during sexual activity.	Т	F
15.	Radiation treatment used to treat prostate cancer causes loss of body hair.	Т	F

16.	If the nerves responsible for erection are removed during surgery, it is not possible to have an orgasm.	Т	F
17.	A urinary catheter is in place for approximately 1 to 2 weeks following surgery.	Т	F
18.	Pelvic lymph nodes are examined at the time of surgery.	Т	F
19.	Sperm banking should be considered if you are planning to have children after treatment for prostate cancer.	Т	F
20.	Compared to the open procedure, the Da Vinci robotic surgical procedure has less impact on urinary and sexual function.	Т	F

Appendix B- Time 2 questionnaires



IDN:	

1. What prostate cancer treatment(s) did you decide to have? (please check all that apply)

Active Surveilla	nce (actively moni	toring my condition)
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Radical Prostatectomy (surgery)

Brachytherapy (seed implants)

Radiotherapy (external beam radiation)

Other: (Please list)

2. Are you receiving or going to receive hormone therapy prior to your treatment? (circle one)

- 1. No
- 2. Yes

Information Preferences Post Treatment Decision

1. How much information would you like to access at this time (check one)?

None:	Minimal:	Moderate Amount:	Ouite A Bit:	A Great Deal:
			· · · · · · · · · · · · · · · · · · ·	

2. Please check off all the information resources you have accessed since your treatment consult.

1. None	7. Internet
2. Friend/relative	8. Television/radio
3. Talking to someone who has prostate	9. Medical Journal
4. Pamphlets from doctor office	10. Video/DVDs
5. Other Doctors (type/s)	11. Newspaper/magazine
6. Attended a Prostate Support Group meeting	12.Other:

3. If you do want to access more information at this time, please indicate what types of information resources you would like (check off all that apply).

i)	Package of written information (brochures, booklets)
ii)	List of suggested Internet sites and notes on how to assess reliability of Internet sites
iii)	Information on how to access patient support groups in my area.
iv)	Watch a DVD on treatments of localized prostate cancer (24 minutes)
v)	Attend a group patient education session with a nurse specialist at the Prostate Clinic to discuss my treatment options, side effects of each treatment option, and advantages/disadvantages of each treatment option.
vi)	Referred to a family counselor to help me deal with the emotional distress I am feeling about my cancer diagnosis.
vii)	Attend a dietician lead group session to learn more about eating a prostate friendly diet.
viii)	Information on Complementary and Alternative Therapies (CAM).
ix)	Learn more about clinical trials available to me at this time.
x)	An appointment with a sexual health nurse to discuss the impact of treatment on my future sexual function.

Assumed Role in Treatment Decision Making

1. Please select the <u>ONE</u> statement that best describes the role you played in making your treatment decision with your <u>urologist</u>.

1. I made the final treatment selection myself.	
2. I made the final treatment selection after seriously considering my urologist's	
opinion.	
3. My urologist and I shared responsibility for deciding which treatment was best.	
4. My urologist made the final treatment decision after he seriously considered my	
opinion.	
5. I left my treatment decision to my urologist.	

Description of what this statement means to you:

Preparation for Decision Making Scale

Please indicate your opinion about the <u>effect of the information you accessed to make a</u> <u>treatment decision</u>. Circle the appropriate number to show the extent to which you agree with each statement.

	Did this educational material …	Not at all	A little	Some- what	Quite a bit	A great deal
1.	Help you recognize that a decision needs to be made?	1	2	3	4	5
2.	Prepare you to make a better decision?	1	2	3	4	5
3.	Help you think about the pros and cons of each option?	1	2	3	4	5
4.	Help you think about which pros and cons are most important?	1	2	3	4	5
5.	Help you know that the decision depends on what matters most to you?	1	2	3	4	5
6.	Help you organize your own thoughts about the decision?	1	2	3	4	5
7.	Help you think about how involved you want to be in this decision?	1	2	3	4	5
8.	Help you identify questions you want to ask your doctor?	1	2	3	4	5
9.	Prepare you to talk to your doctor about what matters most to you?	1	2	3	4	5
10.	Prepare you for a follow-up visit with your doctor?	1	2	3	4	5

- 1. Vividly imagine that you are **afraid** of the dentist and have to get some dental work done. Which of the following would you do? Check **all** of the statements that might apply to you.
 - ____ I would ask the dentist exactly what work was going to be done.
 - ____ I would take a tranquilizer or have a drink before going.
 - ____ I would try to think about pleasant memories.
 - ____ I would want the dentist to tell me when I would feel pain.
 - ____ I would try to sleep.
 - ____ I would watch all the dentist's movements and listen for the sound of the drill.
 - ____ I would watch the flow of water from my mouth to see if it contained blood.
 - ____ I would do mental puzzles in my mind.
- 2. Vividly imagine that you are being held hostage by a group of armed terrorists in a public building. Which of the following would you do? Check **all** of the statements that might apply to you.
 - ____ I would sit by myself and have as many daydreams and fantasies as I could.
 - ____ I would stay alert and try to keep myself from falling asleep.
 - ____ I would exchange life stories with the other hostages.
 - ____ If there was a radio present, I would stay near it and listen to the bulletins about what the police were doing.
 - ____ I would watch every movement of my captors and keep an eye on their weapons.
 - ____ I would try to sleep as much as possible.
 - ____ I would think about how nice it's going to be when I get home.
 - ____ I would make sure I knew where every possible exit was.

3. Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department at work will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about lay-offs has been made and will be announced in several days.

Check **all** of the statements that might apply to you.

- I would talk to my fellow workers to see if they knew anything about what the Supervisor's evaluation of me said.
 - I would review the list of duties for my present job and try to figure out if I had fulfilled them all.
 - ____ I would go to the movies to take my mind off things.
- ____ I would try to remember any arguments or disagreements I might have had that would have resulted in the supervisor having a lower opinion of me.
- ____ I would push all thoughts of being laid off out of my mind.
- ____ I would tell my spouse that I'd rather not discuss my chances of being laid off.
- ____ I would try to think which employees in my department the supervisor might have thought had done the worst job.
- ____ I would continue doing my work as if nothing special was happening.

4. Vividly imagine that you are on an airplane, thirty minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well. Check **all** of the statements that might apply to you.

- ____ I would carefully read the information provided about safety features in the plane and make sure I knew where the emergency exits were.
- ____ I would make small talk with the passenger beside me.
- ____ I would watch the end of the movie, even if I had seen it before.
- ____ I would call for the flight attendant and ask what exactly the problem was.
- ____ I would order a drink from the flight attendant or take a tranquilizer.
- ____ I would listen carefully to the engines for unusual noises and would watch the crew to see if their behavior was out of the ordinary.
- ____ I would talk to the passenger beside me about what might be wrong.
- ____ I would settle down and read a book or magazine or write a letter.

IUS

You will find below a series of statements which describe how people may react to the uncertainties of life. Please use the scale below to describe to what extent each item is characteristic of you. Please circle a number (1 to 5) that describes you best.

	Not at all characteristic		Somewhat characteristic		Entirely characteristic of
	of me		of me		me
1. Uncertainty stops me from					
having a firm opinion.	1	2	3	4	5
2. Being uncertain means that a					
person is disorganized.	1	2	3	4	5
3. Uncertainty makes life					
intolerable.	1	2	3	4	5
4. It's unfair not having any					
guarantees in life.	1	2	3	4	5
5. My mind can't be relaxed if I					
don't know what will happen					
tomorrow.	1	2	3	4	5
6. Uncertainty makes me uneasy,					
anxious, or stressed.	1	2	3	4	5
7. Unforeseen events upset me					
greatly.	1	2	3	4	5
8. It frustrates me not having all					
the information I need.	1	2	3	4	5
9. Uncertainty keeps me from					
living a full life.	1	2	3	4	5
10. One should always look ahead so		_	_		_
as to avoid surprises.	1	2	3	4	5
11. A small unforeseen event can					
spoil everything, even with the best of		-			-
planning.	1	2	3	4	5
12. When it's time to act,		_	_		_
uncertainty paralyses me.	1	2	3	4	5
13. Being uncertain means that I am		_	_		_
not first rate.	1	2	3	4	5
14. When I am uncertain, I can't go		-			_
forward.	1	2	3	4	5
15. When I am uncertain I can't		-			_
function very well.	1	2	3	4	5

	Not at all		Somewhat		Entirely characteristic of
	of me		of me		me
16. Unlike me others always seem to	or me		or me		me
know where they are going with their					
lives.	1	2	3	4	5
17. Uncertainty makes me					
vulnerable, unhappy, or sad.	1	2	3	4	5
18. I always want to know what the					
future has in store for me.	1	2	3	4	5
19. I can't stand being taken by					
surprise.	1	2	3	4	5
20. The smallest doubt can stop me					
from acting.	1	2	3	4	5
21. I should be able to organize					
everything in advance.	1	2	3	4	5
22. Being uncertain means that I					
lack confidence.	1	2	3	4	5
23. I think it's unfair that other					
people seem sure about their					
future.	1	2	3	4	5
24. Uncertainty keeps me from					
sleeping soundly.	1	2	3	4	5
25. I must get away from all					
uncertain situations.	1	2	3	4	5
26. The ambiguities in life stress me.					
	1	2	3	4	5
27. I can't stand being undecided					
about my future.	1	2	3	4	5

PSSCAN -Screening Tool

<u>*Part A*</u> Please respond to each question with a simple "Yes" or "No" by making a circle around the appropriate answer or by circling a number. There are no right and wrong answers.

1.	Do you live alone?	YES	NO			
2.	When you need help, can you count on anyone to help with daily tasks like grocery shopping, cooking, giving you a ride?	YES	NO			
3.	Do you have regular contact with friends or relatives?	YES	NO			
4.	Have you lost your life partner within the last few years ?	YES	NO			
5.	Can you count on anyone to provide you with emotional support?	YES	NO			
6.	Do you feel that you <u>want and need</u> this kind of em	notional support ?	,			
	No, not at all 0 1 2 3 4 5 6 7	8 9 10	Very much			
<i>Part B:</i> Please circle the number that best describes how you feel:						
7.	Would you say that in general your health is					
	Very Poor <u>0 1 2 3 4 5 6 7</u>	8 9 10	Excellent			
8. Would you say that in general your quality of life is						
	Very Poor <u>0 1 2 3 4 5 6 7</u>	<u>8 9 10</u>	Excellent			

9. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

10. Now thinking about level of stress, depression, and problems with emotions, for how many days during the past 30 days was your mood not good?

11. During the past 30 days, for about how many days did poor physical or emotional health keep you from doing your usual activities, such as self-care, work, or recreation?

	Not at all	A little Bit	Moderately	Quite a bit	Very much
12. <i>During the past week</i> I have felt that my heart races and I tremble.		Dit			50
13. <i>During the past week</i> I have felt that I cannot control anything.					
14. <i>During the past week</i> I have lost interest in things I usually cared for or enjoyed.					
15. <i>During the past week</i> I have felt nervous and shaky inside.					
16. <i>During the past week</i> I have felt tense and can't relax.					
17. <i>During the past week</i> my thoughts are repetitive and full of scary things.					
18. <i>During the past week</i> I have felt restless and find it difficult to sit still.					
19. I have <i>recently</i> thought about taking my life.					
20. In the past year, I have had 2 weeks or more during which I felt sad, blue, or depressed.					
21. I have had 2 years or more in my life when I felt depressed or sad most days even if I felt o.k. sometimes.					

<u>Part C:</u> Please place an 'x' in the box that best describes what you have experienced

Prostate Cancer Knowledge Questionnaire

IDN:_____

Date:_____

TRUE or FALSE. Some of the statements below are true; some are false. Please circle **T** for each statement that you think is **TRUE**; circle **F** for each one that you think is **FALSE**.

1.	Transrectal Ultrasonography (TRUS) biopsies are able to identify the	Т	F
	presence of cancer in all areas of the prostate gland.		
2.	A higher Gleason score means that the cancer cells are less aggressive.	Т	F
3.	A clinical stage is an estimate of the extent of prostate cancer and how far it has spread.	Т	F
4.	The entire prostate gland and seminal vesicles are removed during a radical prostatectomy surgical procedure.	Т	F
5.	Cure means that the prostate cancer will never return.	Т	F
6.	All treatments for prostate cancer have an impact on current erectile function.	Т	F
7.	Brachytherapy radiation involves implanting tiny seeds into the prostate gland for a short period of time and then removing them.	Т	F
8.	Hormonal therapy is a common treatment used to treat prostate cancer that is confined to the gland.	Т	F
9.	Active surveillance may be considered as a reasonable way to manage prostate cancer that is low risk and confined to the prostate gland.	Т	F
10.	Following treatment, prostate specific antigen (PSA) tests are the most commonly used tests to determine if the prostate cancer has recurred or is progressing.	Т	F
11.	The PSA level decreases gradually after surgery.	Т	F
12.	The majority of participants may experience slight urine leakage following surgery.	Т	F
13.	Following surgery, there is no ejaculate fluid.	Т	F
14.	It is possible to transmit prostate cancer to partners during sexual activity.	Т	F

15.	Radiation treatment used to treat prostate cancer causes loss of body hair.	Т	F
16.	If the nerves responsible for erection are removed during surgery, it is not possible to have an orgasm.	Τ	F
17.	A urinary catheter is in place for approximately 1 to 2 weeks following surgery.	Τ	F
18.	Pelvic lymph nodes are examined at the time of surgery.	Т	F
19.	Sperm banking should be considered if you are planning to have children after treatment for prostate cancer.	T	F
20.	Compared to the open procedure, the Da Vinci robotic surgical procedure has less impact on urinary and sexual function.	Т	F