Chapter 7
FINDINGS AND CONCLUSIONS

Overview

The overall goal of this thesis was to gain a greater understanding of psychological factors that may influence adjustment, in the context of pain among patients with advanced cancer. Four psychological factors were explored: negative emotion, positive emotion, meaning of pain and perceived effectiveness of pain management strategies. Relationships between three characteristics of pain (frequency, duration and intensity) and three measures of adjustment (level of coping, quality of life and presence of symptoms of depression) were examined. A model based upon psychological theory provided a framework for exploration of direct and indirect relationships between pain characteristics, psychological factors and adjustment (p. 53). Results confirmed some pain characteristics were associated with poorer adjustment among patients with advanced cancer. Some psychological factors were associated with poorer adjustment, while others were associated with better adjustment. There was also evidence that some psychological factors moderate the relationship between pain characteristics and some aspects of adjustment. Therefore, in general, these results provided broad support for the model.

This thesis has demonstrated broad support for the model, using methods, design and diversity of sampling that allowed for comparison of similarities and differences across time and populations. It has the benefits of insights gained from large quantitative, longitudinal, small quantitative, and also qualitative research, including data-intensive

case studies. The adoption of both variable-focused and person-focused approaches enabled the exploration of group-level relationships, in addition to providing a rich description of patients' experience, which can only be obtained from qualitative analyses. These qualitative analyses also suggested the existence of additional relationships that would otherwise have been missed.

The model depicted the expected relationships between pain characteristics (frequency, duration and intensity), other symptoms, psychological factors (negative and positive emotion, meaning of pain and perceived effectiveness of pain management strategies) and adjustment (p. 53). These methods and design were employed to test five propositions about the relationships between pain characteristics, psychological factors and adjustment among patients with advanced cancer. Pain characteristics, intensity of other symptoms and psychological factors were expected to influence adjustment. In addition, psychological factors were expected to moderate the relationship between pain characteristics and adjustment. The stability of these relationships was explored over time. Study 1 addressed all five propositions. The exploration of pain characteristics in subsequent studies was narrowed to breakthrough pain. Studies 2 and 3 built upon direct relationships between pain characteristics, psychological factors and adjustment. Studies 1 and 5 addressed moderation and stability of these relationships.

Summary of Findings.

Although broad support was found for this model, several of the expected relationships between predictors and the three aspects of adjustment (coping, quality of life and

symptoms of depression) were not found (pp. 104, 105, 154, 189 & 190). Furthermore, several of the relationships found were not predicted by the model. For example, in Study 1, pain variables unexpectedly showed different patterns of findings for the two outcome variables. There was a negative association between pain intensity and coping, but no relationship between pain intensity and quality of life. In contrast, pain frequency was positively associated with quality of life but showed no relationship with coping. In Studies 2 and 3, relationships with breakthrough pain characteristics were found with only one aspect of adjustment (level of coping). However, not all aspects of the model could be tested. The presence of very few other symptoms (Study 1) prevented adequate exploration of expected relationships between this variable and adjustment. These findings confirm that pain characteristics are important to adjustment, however may be more important to some aspects of adjustment than others.

The study tested the proposition that psychological factors explain variance in coping over and above that explained by pain. Psychological variables also, unexpectedly showed different patterns of findings for the two outcome variables (Study 1). Positive emotion was positively associated with coping, but showed no relationships with quality of life. However, negative emotion was negatively associated with both coping and quality of life. Although relationships between psychological factors (perceived effectiveness of pain management strategies and meaning of pain) and both aspects of adjustment (level of coping and symptoms of depression) were found in Studies 2 and 3, the relationships were not those predicted by the model. For example, the meanings "weakness" and "punishment" were negatively associated with level of coping, but there

were no relationships between level of coping and other meanings. The meanings "loss" and "spiritual" were positively associated with symptoms of depression, but there were no relationships between symptoms of depression and other meanings. These findings indicate that psychological factors are at least as important as pain characteristics to adjustment. In addition, some psychological factors are more important for some aspects of adjustment than others.

The study also explored the possibility that psychological factors interacted with pain variables. Although psychological factors were expected to moderate the relationship between pain variables and the two outcome variables, the only interaction found was between negative emotion, pain intensity and coping. Patients were less likely to be coping with high intensity pain, when they were also experiencing high levels of negative emotion. The small sample sizes (Studies 2 and 3) precluded testing for potential interactions between breakthrough pain characteristics, psychological factors and adjustment. However, the patterns between breakthrough pain characteristics, meaning of pain and level of coping observed in individual patients (Study 5) suggest that the relationships between these variables are worthy of further exploration. Overall, the findings of this study suggest that psychological factors are more important for some patients with advanced cancer, and for some aspects of adjustment than others. Hence, if clinicians only focus on the pain characteristics of patients with advanced cancer, important predictors of coping are certain to be missed.

Relationships between pain characteristics and adjustment. This thesis confirmed that higher pain characteristics (intensity and frequency) were associated with poorer adjustment. Consistent with the model, it confirmed that previous findings (e.g., Roberts et al., 2006; Turk et al., 1998) showing higher pain intensity was associated with poorer coping. In addition, higher frequencies of pain were associated with lower quality of life. This thesis also discovered previously unreported direct negative relationships between pain characteristics (breakthrough pain intensity and frequency) and adjustment (level of coping).

The relationship between various predictors and adjustment for patients with cancer has been extensively investigated and reported in the existing literature. It is generally accepted that pain influences adjustment (e.g., Anderson, Syrjala, & Cleeland, 2001, de Wit et al., 1999; Fine, Davies, & Fishman, 2008; Green et al., 2010; Turk et al., 1998). However, the pain characteristics that were measured and the method of assessment varied from study to study. For example, the most widely used multidimensional pain assessment tool, the Multidimensional Pain Questionnaire (MPQ) (Melzack, 1975), measures intensity, but not frequency and duration. The relationship between pain intensity and outcomes was commonly reported (e.g., Barkwell, 1991; Elander & Robinson, 2008; Green, Montague & Hart-Johnson, 2009; Hwang, Chang & Kasimis, 2002; Jensen, Chang, Lai, Montague & Green, 2009; Portenoy, Payne & Jacobsen, 1999; Rustoen, Moum, Padilla, Paul & Miaskowski, 2005), although pain frequency and duration were examined less frequently. In one of the exceptions, longer duration of pain was associated with greater psychological distress and lower quality of life

(Rustoen et al., 2005). In addition, duration of pain was considered to be an important dimension of all pain, but especially breakthrough pain (Green et al., 2009; Portenoy, Payne & Jacobsen, 1999; Zeppetella, O'Doherty & Collins, 2000). Although there are comprehensive measures available for assessment of multiple pain characteristics (e.g., Alberta Breakthrough Pain Assessment Tool for Cancer Patients, Hagen et al., 2008) these measures are long and too challenging for many patients with advanced cancer. Similarly, although pain diaries were recommended by many clinicians who treat chronic pain, including cancer pain, compliance among patients with advanced cancer was limited, particularly when pain was severe (de Wit et al., 1999). This thesis used both brief summative and diary measures of pain characteristics (frequency, duration and intensity) among samples consisting exclusively of patients with advanced cancer. It found general agreement with existing literature that pain intensity and frequency both influence adjustment, however, no relationship between pain duration and adjustment was found. Although previous studies have reported that pain duration was important to adjustment (e.g., Green et al., 2009; Rusteon et al., 2005), these studies did not exclusively assess breakthrough pain. It is beyond the scope of this study to explain this unexpected result, however it is possible relationships were not detected because of the low statistical power in the two studies in which this relationship was examined. Another possible explanation may be that summative measures used in quantitative analyses were unable to meaningfully capture pain duration, which showed particularly high variability.

Relationships between other symptoms and adjustment. This thesis was unable to confirm or refute the relationships predicted by the model, pertaining to other distressing symptoms and adjustment in patients with advanced cancer. Very few patients in the sample reported the presence of other symptoms, which prevented adequate exploration of expected relationships between this variable and adjustment. Previous studies have reported that the presence of distressing symptoms other than pain also has an adverse impact upon adjustment (Anderson, Syrjala & Cleeland, 2001; Ersek, Kraybill & Du Pen, 1999; Lidstone, 2003; Strongrem, 2006; Walling et al., 2010). However, in this sample, few patients reported other symptoms and those who did, reported only mild symptoms. It was therefore not surprising that no relationship was found between other symptoms and adjustment. Further research in a sample in which there is a greater presence and intensity of symptoms across the range is required, before the differential effects of pain and other symptoms on adjustment among cancer patients with advanced disease can be understood.

The relationships between psychological factors and adjustment. This thesis confirmed that psychological factors have an important influence on adjustment. Partial support for the model was demonstrated by direct relationships found between level of coping and four psychological factors: negative emotion, positive emotion, meaning of pain and perceived effectiveness of pain management strategies; between negative emotions and poor quality of life, and some meanings of pain and more symptoms of depression.

A number of studies have explored the impact of various psychological factors on adjustment. However, most of these studies have focused on patients with non-malignant disease, or cancer patients whose disease was not advanced. For example, meanings were found to influence adaptation to pain and treatment response among patients with non–terminal illness (Holland et al., 1998, 1999; Richer & Ezer, 2000). Similarly, direct relationships between positive and negative emotion were commonly mentioned psychological factors associated with adjustment among patients with cancer (Henoch et al., 2007; Miaskowski, Kragness, Dibble, & Wallhagen, 1997; Syrjala & Chapko, 1995; Voogt et al., 2005). Studies of the role of psychological factors in adjustment in patients with advanced cancer have not focused on the context of pain characteristics other than intensity (Barkwell, 1991). This thesis extended existing research by demonstrating that these psychological factors are also important to adjustment in patients with advanced cancer who experience pain.

This thesis focused on one psychological factor in particular, meaning of pain. A pattern in the results was identified. Meanings perceived as aversive (e.g., weakness, loss) were associated with poorer coping and more symptoms of depression. Meaning of pain has been widely studied in other patient and non-patient populations, but has been the focus of only one prior study conducted exclusively among patients with advanced cancer (Barkwell, 1991). Most previous research concerning the meaning-making process, meaning of cancer and meaning of pain indicated that these are important phenomena in pain perception and adjustment (Ahles, Blanchard & Ruckdeschel, 1983; Barkwell, 1991; Cassell, 1982; Chung, 2000; Ferrell & Dean, 1995; Fife, 1995, 2000;

Lee, 2008; Northouse, 1988; Richer & Ezer, 2000; Spiegal & Bloom, 1993). In particular, some studies have found non-aversive meanings of cancer (Chung, 2000; Park et al., 2008) and cancer pain (Barkwell, 1991; Ferrell & Dean, 1995) were related to better adjustment. In contrast, aversive meanings were related to poorer adjustment (e.g., Barkwell, 1991; Smith et al., 1998). However, some previous research has failed to find a relationship between meaning of pain and adjustment (Dirksen, 1995; Gotay, 1985). This inconsistency in findings may be due to differences in the conceptualisation and operationalisation of meaning. Another explanation, however, may be that different meanings and hence unique relationships between meaning of pain and adjustment may be present when patients have a terminal illness.

Previous research provided little guidance about how best to measure meaning of pain. Consequently, three different approaches to measurement were used in an attempt to capture this construct. Study 2 measured meaning of pain using custom-designed single-item rating scales derived from previous research (Barkwell, 1991). Study 3 used a multi-item scale developed in previous research (Chen, 1995). Both approaches found that meaning of pain was associated with adjustment. A pattern in the results was identified. Meanings perceived as aversive (e.g., weakness, loss) were associated with poorer coping and more symptoms of depression. However, neither study found the patterns of endorsement of meanings or the relationships between meaning and adjustment that were expected on the basis of previous research (e.g., Barkwell, 1991; Lipowski, 1970). It became clear that many patients were endorsing more than one meaning. It was concluded that quantitative analyses of meaning of pain may not have

been adequately capturing patients' experience. Therefore, the focus of the analysis moved to qualitative data concerning meaning of pain. An aim of this approach was to ascertain whether the unexpected findings of Studies 2 and 3 reflected differences between the meaning of pain for patients in past research and the present thesis, or whether the findings were an artifact of inappropriate measures that were unable to adequately capture the patients' meaning of pain.

The analysis of qualitative data (Study 4) extended existing knowledge about meaning of pain in a number of ways. First, a wider range of meanings, than had previously been reported was revealed. Second, the finding that patients often subscribed to multiple meanings of pain was confirmed, and third, the range of combinations of meanings was revealed. Diverse and complex meanings were found even within a particular meaning category. Fourth, the meaning of pain and cancer were often inextricably connected. Fifth, it not only confirmed that not all meanings ascribed to pain were aversive, but also discovered that the same patients sometimes ascribed both aversive and non-aversive meanings to pain. These results indicated that quantitative analyses in previous research and in Studies 2 and 3 had failed to capture the complex and diverse nature of meaning of pain. The final study then explored the relationships between these meanings and adjustment. In summary, this thesis extended previous findings about meaning of pain by confirming that meaning of pain among patients with advanced cancer does influence at least two aspects of adjustment (level of coping and symptoms of depression).

Indirect relationships between adjustment, pain characteristics and psychological factors. This thesis also explored indirect relationships between psychological factors and adjustment. In particular, it extends previous literature by providing information about moderation of the relationship between pain characteristics and adjustment by psychological factors. Partial support for the model was demonstrated. In Study 1, statistical analyses showed the strength of the negative relationship between pain intensity and coping was greatest when negative emotions were present. In Study 5, descriptive analyses suggested that non-aversive meanings of pain may ameliorate the influence of pain characteristics on adjustment, whereas aversive meanings may have an exacerbating influence, however further quantitative analysis is required to confirm this potential relationship.

Research on other patient populations has shown that psychological factors moderate the relationship between pain and adjustment. For example, several psychological factors, such as personality and social interaction were found to moderate the relationships between pain and adjustment in arthritis (Edwards, Giles, Bingham, Campbell, Haythornwaite & Bathon, 2010; Newith & De Longis, 2004). Similarly, one positive emotion, hope, was associated with lower pain intensity and higher quality of life among patients without advanced disease (Utne et al., 2010). In addition, negative emotion was associated with higher pain intensity and duration (e.g., Glover, Dibble, Dodd, & Miaskowski, 1995; Strang & Qvarner, 1990) and poorer adjustment (e.g., Lehto, Ojansen & Kellumpu, 2004). Indirect relationships between these psychological factors, pain and adjustment were not explored in these studies. Study 1 extended previous

research by finding the relationship between adjustment and pain intensity was moderated by negative emotion. In addition, the existing literature suggests that the psychological factor on which this thesis focused, meaning of pain, may moderate the experience of pain (including breakthrough pain) for cancer patients (e.g., Fine et al., 2008; Rustoen et al., 2005). For example, Barkwell (1991) suggested that the meaning ascribed to cancer pain moderated the relationship between pain and use of coping strategies. This thesis extended existing knowledge by providing descriptive analyses in Study 5 which were also consistent with the conclusion that meaning of pain moderates the relationship between pain characteristics and adjustment. This pattern of findings suggests that it is worthy of a further mixed methods analyses (using qualitative measures of meaning of pain and existing measures of pain characteristics and adjustment) to confirm the indirect relationships between meaning of pain, breakthrough pain characteristics and adjustment.

Stability of relationships between pain characteristics and adjustment. This thesis further extended existing knowledge about the relationships between pain characteristics, psychological factors and adjustment by exploring the stability of these relationships over time. In particular, it showed there were differences in the stability of relationships between pain characteristics and coping over time. The stability of pain characteristics over time has been previously reported (e.g, de Wit et al., 1999, Green et al., 2009; Zeppetella, 2008), but relationships between pain characteristics and adjustment over time have not. This thesis extends previous literature by showing that

the relationships between pain characteristics and level of coping were stable when measured on three occasions over a period of five weeks (Study 1).

The stability of relationships between breakthrough pain characteristics and coping was also a focus in Study 5. Consistent patterns in these relationships were not observed between day-to-day records of breakthrough pain (which, by definition is unpredictable and variable) and day-to-day records of coping. This study found fluctuations in breakthrough pain characteristics and level of coping reported by most patients across consecutive days, demonstrating that summative reports do not foretell day to day variations in the experience of breakthrough pain characteristics and level of coping. It was concluded that summative accounts of pain characteristics and coping do not capture the experience of patients with breakthrough pain.

This thesis showed that, despite the stability of relationships between pain and coping (Study 1), the relationships between breakthrough pain and level of coping varied from day-to-day, over periods of five to 16 days, for individual patients (Study 5). The inconsistent findings may be explained by the different focus of the two studies. That is, Study 1 examined relationships between adjustment and pain in general, whereas Study 5 focused on relationships between adjustment and one specific type of pain: breakthrough pain. Differences in findings may also be explained because the variable-focused analysis (Study 1) does not reflect the experience of individual patients reported in person-focused analysis (Study 5). In summary these results suggest that the relationship between pain (in general) and coping among patients with advanced cancer

is stable, however, because breakthrough pain is unpredictable and variable by nature, it may not be useful to compare the relationship between breakthrough pain and adjustment with other types of pain and adjustment.

The stability of the relationships between pain characteristics, psychological factors and adjustment exclusively among patients with advanced cancer has not been explored in the previous literature. Highly unstable relationships between these predictors and adjustment are likely to present an additional challenge to adjustment for cancer patients with pain and therefore it is worthy of exploration. However, further research is required before firm conclusions can be drawn regarding the stability of these relationships.

Limitations

This thesis has five limitations which need to be taken into account when interpreting the findings. Four pertain to the samples and one to methods. First, the data-set used in Study 1was old and incomplete. An older data-set was considered acceptable, because although treatment protocols and prevalence of pain may change over time, the relationship between the predictors and outcomes of interest were not expected to. The decision to use this data-set was on the basis of the availability of variables which proved not to be the case. There was also high attrition from the sample, and a lot of missing data. Unfortunately the missing data were often of interest to this thesis. Consequently some of the planned analyses were unable to be conducted. Nevertheless, the data-set still offered a large sample of patients with advanced cancer and who were

drawn from multiple sites. Therefore, despite its limitations the data-set was considered to be useful for this thesis.

Second, the sample sizes in the quantitative analyses for subsequent studies were small. This precluded several of the planned main analyses and made interpretation of results difficult. In particular, it was not possible to determine whether predictor variables (e.g., breakthrough pain frequency and effectiveness of pain management strategies) explained independent variance in adjustment. On the other hand, the small samples in these studies did not impede the qualitative analyses.

Third, the distribution of scores on some variables was restricted. Ideally, to test the model, the sample would have contained patients with scores on variables across the range. However, the characteristics of the distribution of scores allowed only partial testing of the model. Very few patients reported pain that presented real challenges to their adjustment in any of the recruitment sites. Therefore, although relationships were found between some predictors and aspects of adjustment, it cannot be determined whether these findings apply for patients with higher intensities of pain and other symptoms, and for patients reporting poorer adjustment and less effective pain management strategies.

Fourth, the concept of breakthrough pain is complex and without a universally accepted definition in the literature. Similarly, patients may have difficulty understanding the concept even after being given a definition of breakthrough pain. Some patients may

therefore have reported background pain as breakthrough pain, or failed to report episodes of breakthrough pain. In order to overcome this problem, it is recommended that future research on breakthrough pain among patients with advanced cancer does not specifically ask patients to report episodes of breakthrough pain. Instead, patients should be asked to report each day, the time of onset, the time of peak intensity, the intensity of each episode and the time it finished. The researcher could then use the data pertaining to the pain characteristics of episodes that were consistent with the definition of breakthrough pain.

Fifth, the measures used in this thesis were not ideal. Where relevant validated measures were available, these were used (e.g., *Hebrew Rehabilitation Center for Aged QL Index*, (Llobera, 2003); depression screening questions (Chochinov, 1995); Perceived Meanings of Cancer Pain Inventory (Chen, 1995). However, directly relevant measures that were brief and had been validated for use in palliative care were not available. Custom-designed measures were constrained by the requirement for brevity to avoid placing unacceptable burden on patients who were very ill. As a consequence, the reliability and validity of many of the measures used in this thesis were not able to be established and results therefore need to be treated with caution.

Clinical Implications

The findings of this thesis confirm that pain characteristics are an important influence on adjustment. However they also show that psychological factors are at least as important. This suggests that clinicians seeking to identify patients at risk for poor adjustment

should ask questions about psychological issues as well as about pain. One psychological factor, meaning of pain, may be particularly important to adjustment in the presence of breakthrough pain, because patients who ascribed aversive meanings to pain, in general, reported poorer adjustment. Therefore it may be helpful to explore meaning of pain with patients who report breakthrough pain and who seem to be experiencing difficulties with adjustment.

It may be very important for clinicians seeking to identify patients at risk for poor adjustment to include questions about psychological factors (negative affect, meaning of pain, perceived effectiveness of pain management strategies, and perhaps meaning of breakthrough pain) in their conversations with patients. Previous research indicates that a positive response to one or more questions (e.g., Chochinov et al., 1997) about the two core symptoms of depression warrants referral for psychological interventions. These questions are:

1. "During the past two weeks, have you often been bothered by feeling down, depressed or without hope?"
2. "During the past two weeks, have you often been bothered by a lack of interest or pleasure in doing things?"

On the basis of my experience, an additional useful strategy may be to include the following questions in routine conversations with patients.

1. "How well do you believe that you are coping with your pain?"
2. "How satisfied are you with your pain management?"

3. "What does it mean to you when you experience pain?"

If responses to these questions reveal aversive meanings of pain and/or dissatisfaction with the effectiveness of pain management strategies, clinicians could further explore meaning of pain, perceived pain management effectiveness and coping. Finally, the findings of this thesis suggest that the relationships between pain, psychological factors and adjustment for individual patients, may change over time. Although it is important that patient burden is kept to a minimum, clinicians also need to obtain sufficient information to guide treatment. A brief daily pain diary which includes a question about coping with each pain (question 1 above) may be considered for patients whose pain characteristics are unstable.

The findings also highlight the importance of holistic multidisciplinary approaches to interventions to improve adjustment to pain, and the special role that psychology may be able to play in improving outcomes at the end-of-life. In particular, psychologists and other mental health professionals may be ideally placed to provide interventions to influence emotions and meaning-making, and to broaden patients' range of pain management strategies.

Based on this research experience, I have three recommendations for future research among patients with pain during the advanced stages of cancer. These pertain to research design, recruitment and selection of measures. First, both quantitative and qualitative approaches provided useful insights about the relationships between pain, psychological factors and adjustment, but neither adequately captured these phenomena

in isolation. Although pain and coping were able to be operationalised effectively using quantitative techniques, the multiple, complex, and contextual meanings of pain reported by individual patients could only be captured by the qualitative analyses. A mixed-methods design is therefore more appropriate. Second, gaining access to this group of patients is extremely difficult if the researcher is not involved in patient care, particularly in care contexts in which many of the patients live in community settings. The high demands placed upon clinicians in meeting the day-to-day needs of patient care mean that recruitment of patients for research often has low priority. When multiple studies are also attempting to draw from the same pool of patients, there is a high likelihood that patients may not be referred. One strategy for increasing access to patients may be for research to be regularly mentioned during case review meetings. Third, most existing measures of psychological factors and adjustment are lengthy, thus imposing an excessive burden on patients at the end-of-life, or they contain items which are not applicable at this life stage. Future research with this population would be greatly aided by the development of brief, simple and relevant measures. In addition, my experience in measuring breakthrough pain characteristics revealed that patients may confuse some episodes of breakthrough pain with background pain. Therefore, it may be more useful to collect the data required for the researcher to distinguish between background pain and episodes that are consistent with the definition of breakthrough pain.

Final Conclusion.

Most research on pain in patients with advanced cancer focuses on medical interventions to reduce pain, as a means of improving outcomes. Medication is important and necessary, however, for some patients, pain cannot be always be eliminated without reducing alertness and compromising their ability to interact meaningfully with family and friends. Therefore, other strategies, in addition to strong pain medications, are needed to improve outcomes for patients experiencing pain.

This thesis has increased understanding of the predictors of adjustment to pain in an attempt to contribute to improved treatment outcomes and higher quality of life for patients with advanced cancer. Relationships between pain characteristics and a wide range of psychological factors that may influence the relationship between adjustment and pain were explored in five studies. These employed a wide variety of research designs and approaches to analysis. The research used qualitative and qualitative approaches, archival cross-sectional and longitudinal designs, and contemporary samples in order to better understand the experience of patients with advanced cancer, who experience pain.

This thesis was innovative in method and design, and explored multiple psychological predictors in the one study. It has the combined benefits of larger quantitative and longitudinal, and small quantitative and qualitative research using data-intense case studies.

It confirms that some pain characteristics and some psychological factors influence adjustment. Psychological variables account for as much or more variance in some

outcomes as pain characteristics. Previous research has been extended by demonstrating that specific pain characteristics have different relationships with specific aspects of adjustment. It also demonstrated that some psychological factors moderate the relationship between pain intensity and level of coping. Some psychological factors may ameliorate the influence of pain characteristics on adjustment, while others may have a protective influence.

One psychological factor, meaning of pain, was found to be particularly important to adjustment. An important contribution of this thesis was the development of a Grounded Theory of meaning of pain in patients with advanced cancer and breakthrough pain. The GT revealed a diverse and complex range of meanings ascribed to pain and the ways in which meanings were reported by patients. This has not been previously reported. This complexity and diversity in meanings of pain was not adequately captured using quantitative research methods. These findings are worthy of further exploration.

Finally, this thesis has extended existing knowledge by demonstrating the extent of the variability of breakthrough pain characteristics and coping from day-to-day. This variability indicates that summative reports of breakthrough pain may not provide information that captures the experiences of individual patients. In particular, different patterns of breakthrough pain and coping were revealed for patients with aversive, compared to non-aversive meanings of pain.

One suggested future study would be using a mixed-methods design that incorporates available measures of pain characteristics and coping with qualitative measures of meaning of pain, in order to establish the independent variance in adjustment accounted for by aversive and non-aversive meanings of pain, above and beyond that accounted for by pain characteristics. Such a study may confirm the importance of meaning of pain to adjustment and contribute to the identification of patients who have developed aversive meanings of pain. The ability to identify patients who ascribe aversive meanings to pain may alert clinicians to patients who are at risk of poorer adjustment. When breakthrough pain was frequent, intense, and long lasting, patients with non-aversive meanings of pain tended to cope better than those with aversive meanings.