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**The Links between Locus of Control, Trauma History, and Death Anxiety in Cancer
Patients**

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Introduction

The life-threatening nature of a diagnosis of cancer often gives rise to myriad psychological and existential struggles. For this reason, health psychology researchers are continuously searching for avenues through which to promote the psychosocial adjustment of this population.

Locus of Control

Locus of Control (LOC) is often closely tied to psychological adjustment in the context of serious medical diagnoses, perhaps in part due to the unpredictable and often insurmountable nature of chronic or terminal illness. LOC is a dimension of personality defined by our beliefs about the extent to which we can influence the world around us and the course of our lives.

According to Rotter (1954), who first established this construct as an instrumental component of his social learning theory, those who believe strongly in the capacity of their own actions and abilities to influence their environment and life circumstances are said to have an internal LOC.

On the other hand, those who see the world as rather unpredictable and see their life circumstances as being more strongly influenced by chance, fate, or powerful others than by their own efforts have an external LOC.

The construct of LOC has gathered substantial scientific attention because of its significant implications for academic achievement, psychological wellbeing, and even physical health. An internal LOC orientation has been consistently linked to more positive physical and psychosocial health markers. Individuals who are high in what Peterson and Stunkard (1989) refer to as “personal control”, defined in their review as a “belief about the degree that he or she can bring about good events and avoid bad events” (p. 819), are more likely to seek out and

adhere to medical treatment, cope more successfully with major life crises, enjoy stronger social support networks, and have stronger immune systems. In a study of HIV-positive women, low levels of internal control beliefs and greater belief in the influence of powerful others predicted poorer self-reported physical wellbeing (Simoni & Ng, 2002). These findings indicate that beyond mere access to medical care, patients' beliefs about their own efficacy also play a role in supporting their mental and physical health and may be an important target for improving health outcomes.

Locus of Control in Cancer Patients

As such, control beliefs are a variable of great interest in psycho-oncological research. In cancer patients, having an external LOC is frequently associated with poorer mental health outcomes including depression (Arraras, et al., 2002; Goldzweig, Hasson-Ohayon, Alon, & Shalit, 2016), anxiety, lower quality of life, and lower levels of hope (Brown, et al., 2015; Shukla & Rishi, 2018). In a sample of advanced stage cancer patients, external Health Locus of Control (HLOC) was inversely correlated with various domains of wellbeing, including spiritual, physical, psychosocial, emotional and functional wellbeing (Shukla & Rishi, 2018). Furthermore, in another correlational study, perceiving one's illness as more life-threatening was linked to depressive symptoms only in externally-oriented cancer patients (Goldzweig et al., 2016). It is worth noting that cancer patients may be more at risk for developing an external LOC than those afflicted with other serious illnesses, given that chronic pain patients without cancer showed significantly higher internal LOC scores than cancer patients who were also experiencing pain (Arraras et al., 2002). This suggests that interventions that target personal control beliefs may be especially important for facilitating psychological adjustment to cancer.

Having internal control beliefs, on the other hand, has been linked to more positive outcomes. Cancer patients with an internal health LOC showed more frequent use of active cognitive methods to cope, were less influenced by others, were actively involved in solutions to their problems, and had confidence that they could overcome them (Shukla & Rishi, 2018). A similar phenomenon was observed in another study of newly diagnosed cancer patients whose depressive symptoms were found to be closely correlated with illness severity. However, this relationship was significantly weaker in participants with internal control beliefs, indicating the potential buffering effect of a belief in one's own self-efficacy against illness-related psychopathology (Marks, Richardson, Graham, & Levine, 1986). Control beliefs may, therefore, be an important target for therapeutic interventions to improve psychological adjustment outcomes following a diagnosis of cancer. However, many of these investigations don't use the same definitions and measurements of LOC, with some of them focusing on general LOC, some examining health-related control beliefs (e.g., HLOC) and others looking strictly at cancer-related control beliefs. Considering this inconsistency across studies in operational definitions of LOC and the relatively small number of studies that have evaluated LOC in this particular population, this body of literature would benefit from being streamlined and broadened.

Moreover, much of this work also suffers from neglecting to differentiate between perceived control over the course of illness and perceived control over its cause, yet some studies suggest that this may be an important distinction to consider. In one correlational study that did distinguish between these constructs, patients with cancer who felt they had higher levels of control over the *course* of their illness were more likely to adopt a "fighting spirit" with regards

to their disease, while feelings of personal responsibility for its *cause* were related to more “anxious preoccupation” about the cancer (Watson, Greer, Pruyn, & Van den Borne, 1990). Carney and Park (2018) also found that beliefs that the cancer was caused by patients’ own actions (self-attributions) or by God (God-attributions) were related to poor adjustment in the form of negative affect and pessimism, whereas self-attributions and God-attributions regarding the anticipated course of their cancer were related to better adjustment (e.g., perceived positive life changes, spiritual functioning). Therefore, the degree to which a person sees themselves as having a causal, active role in the treatment of their cancer as opposed to their perceived role in its cause appear to have differential effects on adjustment and it may be important for researchers and clinicians to consider this distinction going forward.

Trauma and Locus of Control

Most of the related empirical literature concurs that LOC is a facet of personality that develops primarily in the formative years of childhood (Bryant & Trockel, 1976; Lee, Daniels, & Kissinger, 2006; Nowicki, Iles-Caven, Gregory, Ellis, & Golding, 2018; Nowicki & Segal, 1974). Several investigations have specifically highlighted the role that trauma and maltreatment during childhood can play in cultivating an external LOC. A comparative study of children between the ages of 5 and 14 revealed that children who had either been neglected, physically abused or sexually abused exhibited higher rates of externality than those who had not experienced maltreatment. This correlation was strongest in older children, suggesting the role of cumulative trauma in external LOC development (Roazzi, Attili, Di Pentima, & Toni, 2016). While most investigations of LOC development have focused on parental factors and other social aspects of the early home environment like those addressed by Roazzi and colleagues, Bryant

and Trockel (1976) further established that individuals with an external LOC had experienced more life changes or stressors on the whole during their preschool and elementary school years than those with an internal LOC. This encompassed stressful events occurring outside the home as well, including relocation to a new school district and the death of a grandparent (Bryant & Trockel, 1976). Some researchers have identified certain forms of childhood trauma that appear to be particularly associated with subsequent external LOC beliefs, including emotional neglect by parents (Fosse & Holen, 2007; Roazzi, et al., 2016), bullying by peers (Fosse & Holen, 2007), and sexual abuse (Parrent, 2012).

Although an individual's LOC orientation is generally stable across adulthood (Nowicki, Iles-Caven, Gregory, Ellis, & Golding, 2018), there is evidence that some cases of exposure to severe trauma or loss as an adult may have an impact on LOC as well. For instance, residents of high-disaster areas of Greece that are frequently destroyed by wildfires display a higher prevalence of external LOC than those living in non-disaster areas (Mellon, Papanikolau & Prodromitis, 2009). The experience of sexual abuse in adulthood was also inversely related to internal control beliefs in a sample of HIV-positive women (Simoni & Ng, 2002). The findings of Arraras, et al. (2002) that adult cancer patients were more externally oriented than chronic pain patients further suggest that LOC may remain somewhat malleable in adulthood. In one of the strongest examples of adulthood influences on LOC, divorced women exhibited an increase in external LOC beliefs within the next 5 years following their separation than women who remained married, although their LOC returned to baseline within the following 5 years. (Doherty, 1969). Notably, the longitudinal nature of this study allowed the researcher to verify that divorce predicted subsequent changes in LOC while baseline LOC orientation did not

predict divorce. This confirms the unidirectional, albeit temporary, effect that major life stressors can have on one's sense of control even beyond childhood. A history of trauma in both childhood and adulthood should thus be further examined as a potential risk factor for the development of maladaptive control beliefs in cancer patients specifically, and may be relevant in clinical settings in order to optimize the physical and psychological health outcomes of this population.

Death Anxiety

As can be expected, Death Anxiety (DA) is another common obstacle that cancer patients face as a result of serious illness. DA most commonly refers to the “negative emotional reactions provoked by the anticipation of a state in which the self does not exist” (Tomer & Eliason, 1996 as cited in Gonen et al., 2012). However, the suffering and pain associated with the process of death itself (Strömberg & Jaarsma, 2014) and the expected negative impact of a patient's death on their loved ones (Cella & Tross, 1987) can also contribute to this type of anxiety.

DA is a form of distress that is distinct from but related to other types of psychopathology. In one of the relatively few existing studies that examined DA in cancer patients, Cella and Tross (1987) confirmed that DA was only weakly to moderately correlated with general anxiety, depression, somatic distress, and global psychological distress in a sample of cancer patients and survivors of Hodgkinson's disease, indicating that it is a construct of its own. Additionally, unlike these other types of distress, DA was uniquely more elevated in patients who had been diagnosed more recently. Importantly, DA in cancer patients has been associated with depression (Krause, Rydall, Hales, Rodin, & Lo, 2015), a shorter perceived life expectancy, and negative expectations about what will happen after death (Gonen et al., 2012).

As such, DA appears to be a sign of poor psychological adjustment to living with cancer rather than merely a typical consequence of a serious medical diagnosis and may warrant clinical attention. There is also evidence that links DA with reduced compliance with medical recommendations, as women with breast cancer who had higher levels of DA were less likely to have a physical or a gynecologic exam at the recommended time (Franco et al., 2000). Given that DA may predict poorer psychological and physical health outcomes, it is an obstacle for cancer patients that should be further researched and clinically addressed.

Locus of Control and Death Anxiety

A small number of studies to date have examined both LOC and DA in cancer patients, though the literature that has considered these constructs together has generally associated DA with having an external LOC orientation. For instance, an external LOC predicted higher levels of DA and anxiety in general in women who were newly diagnosed with stage II-IV cancer (Brown et al., 2015). Internally oriented male and female patients with advanced stage cancer in India were also found to have significantly less DA than patients with an external health-related LOC, suggesting that this correlation may be present across cultures (Shukla & Rishi, 2018). Further, DA was found to be higher in patients with metastatic cancer who had low self-esteem (Neel, Lo, Rydall, Hales, & Rodin, 2015), which is an established correlate of an external LOC orientation (Fosse & Holen, 2007; Halpin, Halpin, & Whiddon, 1980). It could be that lacking a sense of personal control can lead patients to appraise their illness as more threatening, thereby increasing cancer-related anxiety. Interventions that aim to break this cycle and improve cancer patients' psychological adjustment may benefit from investigating this relationship further,

particularly given that the corresponding base of research is at present very small and contains a problematic amount of variation in terms of operational definitions of LOC.

Still fewer studies have considered DA along with prior trauma history and LOC in the context of psycho-oncology. Considering that trauma history is a strong predictor of LOC orientation and LOC, in turn, often predicts DA in this population, there may be a complex interplay between these variables in cancer patients that should be elucidated in order to enhance related psychological interventions. If a history of trauma, an external LOC orientation, or both are found to be consistent risk factors for DA, these qualities could serve as red flags to identify cancer patients who are at risk for poor adjustment and are particularly in need of such interventions. Furthermore, depending on the nature of the relationship, beliefs about personal control could be a key target for therapeutic interventions if it is, in fact, a mechanism through which DA and other mental and physical wellbeing outcomes can be improved. Therefore, these three variables may be important to consider together to extend current understanding of psychological adjustment to cancer.

Present Study & Hypotheses

With these implications in mind, the goal of the present study is to identify any correlations between cancer patient trauma history, LOC orientation, and DA. By considering both childhood and total lifetime trauma while also distinguishing control beliefs about the expected course of illness from those pertaining to the cancer's cause, these analyses aim to extend previous research that has seldom measured such nuanced constructs in conjunction with DA. The study will test (a) the hypothesis that prior psychological trauma, especially in

childhood, will predict an external LOC about course of illness, (b) the hypothesis that an external LOC about course of illness will be related to higher death anxiety, (c) the hypothesis that internal LOC concerning the cause of illness will be related to higher death anxiety, and (d) the hypothesis that prior psychological trauma will be related to higher death anxiety.

Method

The present data was obtained from a larger longitudinal study on quality of life in young to middle-aged survivors of cancer. 600 invitations were mailed to eligible participants including informed consent forms and questionnaire packets. 250 of these were returned (Time 1), with a return rate of approximately 42%. 167 of the follow-up packets that were then mailed to all Time 1 participants one year later (Time 2) were returned, yielding an ultimate retention rate of 66.8%.

Participants

Patients between the ages of 18 and 55 years who were diagnosed with cancer between 1 and 3 years prior were recruited through the cancer registry at Hartford Hospital. At Time 1, the sample had a mean age of 45.2 years and included 172 (69%) women and 78 (31%) men who were predominantly White/European-American (88%). Other races/ethnicities represented in the sample included Latino (5%), Black/African-American (3%), and Native American (2%). An average of 23.4 months ($SD = 14.5$) had passed since participants' completion of primary treatment. Participants suffered from cancer of either the breast (47%), prostate (12%), colon/rectum (6%), lymphoma (5%), cervix/uterus (4.4%), or another type of cancer. At Time 2, the sample consisted of 108 women (65%) and 59 men (35%) with a mean age of 46.3 years (SD

= 6.3) and was still primarily White (89%). For these participants the average time since primary treatment was 2.6 ($SD = 1.6$) years.

Measures

Demographic and basic medical information about each participant was collected through a preliminary questionnaire. From this measure, the amount of time since a cancer diagnosis was received was included in the present study's analyses.

Control beliefs were measured through responses to the Cancer Locus of Control Scale (CLCS) (Watson, Greer, Pruyun, & Van den Borne, 1990), also referred to as the Watson Scale, that were collected at Time 1. The present study utilized data from a subscale of this measure consisting of 11 items that assess the degree of control that respondents believe they or others have over the course of their illness (e.g., "I can definitely influence the course of my illness", "My doctor can definitely influence the course of my illness") and 8 items that assess the extent to which respondents believe they caused their own illness (e.g., "It is partly my fault that I became ill"). Participants rated their agreement with each statement on a scale of 1 (*strongly disagree*) to 4 (*strongly agree*). Some of these items, such as those concerning the influence of coincidence, were reverse scored so that a higher score was indicative of greater internality of control.

One item from the religion subscale of the CLCS, which assesses appraisals of cancer in the context of religious or spiritual beliefs, was included in the analyses. This item reads, "How much does cancer violate your sense of being in control of your life?" and participants respond on a scale of 1 (*Not at all*) to 4 (*Very much*).

History of psychological trauma was measured using the Traumatic Life Events Questionnaire (TLEQ) (Kubany, et al., 2000). This assessment contained 15 items in which participants marked either “yes” or “no” to indicate whether they had experienced various types of traumatic events including a life-threatening accident, a life-threatening illness, victimization of a violent crime, the death of a close loved one, a natural disaster, and sexual or physical assault in either childhood or adulthood. Several items also prompted participants to indicate whether any of their loved ones had experienced these traumas and a final item allowed for open-ended explanation of any other major traumas that were experienced. For each “yes” response, participants recorded the year in which the traumatic event occurred. Participants also rated their stress level at the time of the event, their current stress level due to the event, and the extent to which they felt the event had been resolved on respective Likert scales of 0 (*not at all*) to 7 (*very much*).

Death Anxiety was assessed at Time 2 using Templer’s Death Anxiety Scale (DAS) (Templer, 1970). This measure contains 15 dichotomous items with which participants indicated either agreement or disagreement. These items assessed subjects’ attitudes regarding various aspects of death (*e.g.*, “I am very much afraid to die”, “I often think about how short life really is”). A higher score on this measure indicated higher death anxiety.

Results

Control beliefs and trauma

Table 1 contains the Pearson correlation coefficients representing relationships between DA, trauma, and the various LOC variables included in the data. Time since diagnosis is also

considered as a related factor. No significant correlations were found between trauma and the summed ratings of feelings of control over cause ($r = .101, p = .12$) or the course ($r = .121, p = .06$) of cancer as measured by the CLCS. Physical or sexual abuse in childhood were not related either when analyzed specifically. However, contrary to hypotheses, a specific item concerning the course of illness, “I can definitely influence the course of my illness”, was weakly associated with more total lifetime trauma ($r = .151, p = .018$).

Death Anxiety

Death anxiety was not related to summed ratings of control feelings about the cause or course of illness. However, as expected, those who specifically reported feeling that they could influence the course of their illness experienced significantly less DA ($r = -.166, p = .035$). DA was also strongly associated with the extent to which the cancer diagnosis violated patients’ sense of control over their lives ($r = .431, p < .001$), even when general fear was controlled for. Correlations between DA and lifetime or childhood trauma did not reach significance.

Other Variables

Time since diagnosis was also considered, but was only significantly related to the extent to which a cancer diagnosis violated the patient’s sense of control over their life as measured by the Religion/Spirituality section of the survey ($r = .165, p = .036$)

| | Childhood Physical Abuse | Childhood Sexual Abuse | Lifetime Trauma | Death Anxiety | Time Since Diagnosis |
|--------------------|--------------------------|------------------------|-----------------|---------------|----------------------|
| Control over Cause | .079 | .110 | .101 | .104 | .020 |

| | | | | | |
|---|-------|-------|-------|---------|-------|
| Control over Course | .117 | .121 | .121 | -.066 | .007 |
| Cancer Violates Sense of Control | -.078 | -.050 | .109 | .431*** | .165* |
| I can definitely influence the course of my illness | .088 | .050 | .151* | -.166* | .045 |
| Death Anxiety | .029 | .025 | -.005 | 1 | .015 |

Table 1. Pearson correlation coefficients between several locus of control variables, traumatic life experiences, and death anxiety. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

This study aimed to extend existing empirical literature by analyzing links between variables that have seldom been considered together in prior investigations of psychological adjustment to cancer. By examining correlations in survey data collected from cancer survivors who were diagnosed between 1 and 3 years prior, the investigation yielded some noteworthy findings regarding cancer patients' personal control beliefs and their experience of death anxiety.

The first hypothesis was not supported given that traumatic life experiences did not predict external LOC beliefs about patients' cancer, not even when the traumatic events occurred in childhood in the form of physical or sexual abuse. In fact, this hypothesis was directly contradicted by the finding that more lifetime trauma, rather than less, was related to greater feelings of control concerning the course of one's illness. This finding could be attributed to the potential for trauma survivors to experience positive psychological change by successfully

overcoming and coping with distressing events, a phenomenon known as Post-Traumatic Growth (PTG). Considering that other research has also found PTG to be positively associated with general personal control and perceptions of control over the course of chronic illness specifically (Lau et al., 2018), this may partially account for the similar relationship found in the present data.

Although DA was not found to be related to psychological trauma of any type, it was importantly related in specific ways to LOC. Some support was found for the second hypothesis, which predicted that an internal LOC about the course of one's illness would be inversely related to DA. Although patients' total control score regarding the future course of their cancer was not predictive of DA, participants who specifically reported feeling that they could definitely influence the course of their illness also reported significantly less anxiety about death. This indicates that control beliefs may, in fact, be implicated in psychological adjustment to chronic illness to some degree and corroborates previous findings that internal control beliefs are linked to lower levels of DA in the context of cancer (Shukla & Rishi, 2018; Brown, et al., 2015). Further, it is possible that stronger relationships between these constructs may have been detected had the sample received their cancer diagnosis more recently, as strong correlations between control beliefs and DA have been previously found in patients who were newly diagnosed with cancer (Brown, et al., 2015). Given that changes in individuals' LOC orientations following a negative life event appear to subside after about 6 months (Doherty, 1969), it is possible that the effects of a cancer diagnosis on LOC or control-related DA had subsided in the present sample by the time the data was collected 1 to 3 years later, accounting for the scarcity of strong relationships in the present data.

The complementary hypothesis that patients' internal attributions about the cause of their cancer would predict higher DA, on the other hand, did not find support. Although Carney and Park (2018) found appraisals of the cancer's cause to be important for aspects of psychological adjustment like pessimism, negative affect and life satisfaction, it is possible that beliefs about the *course* of illness may be more relevant to the development of DA specifically. Clinicians working with cancer patients suffering from DA, therefore, may benefit from placing more focus on shaping cognitions about the future as opposed to retrospectively discussing the origin of illness. However, these implications may not generalize to populations with a diagnosis like lung cancer which has much more guilt and personal responsibility attached to it (Criswell, Owen, Thomton, & Stanton, 2016) and which was not represented in the present sample. Cancer type must, therefore, be carefully considered when assessing patients' causal attributions regarding their illness and their related anxiety.

Returning to perceptions of control, the patients in the present study who felt that their cancer diagnosis drastically violated their sense of control over their lives on the whole experienced the very highest levels of DA. This was the strongest relationship detected in the data set and it underscores the concept that in addition to control beliefs about the cancer itself, the way in which the patients' experience of illness colors their perceptions of other aspects of their lives may also be integral to psychological wellbeing and represents a topic that should be addressed by clinicians who are working with this population.

This overarching sense of general control in life was also found to be more significantly disrupted by illness when more time had elapsed since the patient's initial diagnosis, suggesting that a patient's sense of control may progressively deteriorate over time as they experience

different aspects of their lives through the new lens of a diagnosis of cancer. However, the cross-sectional nature of the present data precludes knowledge of whether a lack of personal control results in greater threat perception and anxiety about death or, rather, if the threat of death leads a person to feel more powerless across areas of life. Future studies should employ a longitudinal design to disentangle the causality of this relationship.

In either case, these findings indicate the importance of early intervention, necessarily implying the need to establish markers and risk factors that can identify those in need of these interventions early on. Although the this study did not find traumatic experience to be an antecedent of cancer-related DA or of external control, future studies should investigate whether this relationship is more pronounced in samples who have experienced even more severe levels of trauma than the present sample and seek to identify other predictors and markers of psychological struggle to this end.

The results of these analyses should be interpreted in light of some limitations. First, the study exclusively relied on self-report assessments which, by nature, are not the most objective measurement tools and may produce data that is susceptible to various demand characteristics. Future studies could employ physiological measures such as heart rate or palm conductance in response to death-related cues to achieve a more objective indicator of DA. Second, due to the cross-sectional nature of the data it was not possible to identify causal relationships among the variables of interest. Third, the presence of both men and women in the sample may have resulted in weaker relationships between the study variables. Because men appear to appraise their cancer as much less threatening than do women and, unlike women, report a more internal cancer-related LOC as their prognosis becomes more severe (Leigh, Ungerer, & Percarpio,

1980), their potentially less extreme responses to questions about DA and control may have cancelled out those of the women. Future studies should consider gender as a moderator when perceptions of threat or control are the variables of interest. Finally, pain or physical symptom severity was not included in this investigation nor was the stage of participants' illness recorded, but this may be an important variable to consider in the context of threat appraisals and psychopathology going forward (Gonen, et al., 2012; Krause, et al., 2015; Marks, et al., 1986; Neel, et al., 2015).

Despite these restrictions, this investigation represents an important step in the empirical literature that sheds light on the interplay of control beliefs with anxiety about death in those affected by cancer as few empirical studies have done previously. The findings highlight the potential value of early therapeutic interventions that target and attempt to strengthen personal control beliefs in those who are struggling to accept their cancer diagnosis so that cycles of related negative attributions may be disrupted early on. Perhaps even doctors could take steps to foster patients' sense of power and responsibility for their course of treatment. Both the measures and results also valuably distinguish between control beliefs about the course and cause of patients' illness, suggesting that clinicians may benefit from approaching each differentially when attempting to shift patients' attitudes about their diagnosis. The present study, therefore, points to important next steps for this line of research to take. If future psycho-oncological researchers can further unravel the complexities of the interrelationships between death anxiety, control beliefs and potential antecedents like trauma and test the effectiveness of therapeutic interventions geared toward these issues, we may uncover ways to better support the psychological wellbeing of those who are living with cancer.

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