

Research Article

Psychological Flexibility Buffers the Effects of Intolerance of Uncertainty and Diminished Masculine Self-Esteem on Distress in Prostate Cancer

Yingna Li ¹, Anne Finucane ^{1,2} and David Gillanders ¹

¹School of Health in Social Science, The University of Edinburgh, Edinburgh EH8 9AG, UK

²Marie Curie Hospice Edinburgh, Edinburgh, UK

Correspondence should be addressed to Yingna Li; yingna.li@ed.ac.uk

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Objectives: Living with prostate cancer presents considerable psychological challenges. Previous research has identified masculinity, intolerance of uncertainty, coping, and psychological flexibility as predictors of psychological adjustment, suggesting an integrative framework. However, the interplay between these factors remains underexplored. This study aims to address this gap by examining how these psychological factors collectively influence distress and well-being in prostate cancer, with a specific focus on the moderated mediation models involving coping and psychological flexibility. Findings will inform the development of tailored interventions and supportive care for men with prostate cancer.

Methods: A cross-sectional, correlational survey design was employed. A total of 162 men diagnosed with prostate cancer completed an online survey containing a battery of validated measures and demographic questions. Bivariate correlation, hierarchical regression, and conditional process analyses were conducted to test the proposed relationships.

Results: Psychological flexibility, masculine identity, masculine self-esteem, intolerance of uncertainty, and coping collectively explained 61.9% of the variance in distress and 52.7% in mental well-being. Masculine self-esteem emerged as the strongest predictor of both outcomes. Psychological flexibility explained significant additional variance beyond other psychological predictors and prostate cancer symptoms. Moreover, psychological flexibility moderated the indirect relationship between masculine self-esteem and distress through avoidant coping, as well as the direct effect of intolerance of uncertainty on distress.

Conclusions: Screening for difficulties related to masculine self-esteem and intolerance of uncertainty may help identify men at higher risk of poorer psychological adjustment following prostate cancer diagnosis. Interventions such as Acceptance and Commitment Therapy or mindfulness-based approaches may enhance psychological flexibility, improve tolerance of uncertainty, and foster adaptive engagement with masculine identity. Targeted interventions addressing the framing and enactment of masculinity may also prove beneficial.

Keywords: acceptance and commitment therapy; coping; intolerance of uncertainty; masculinity; prostate cancer; psychological flexibility

1. Introduction

Prostate cancer (PCa) is the second most commonly diagnosed cancer among biological men worldwide, with its incidence rising in recent years [1, 2]. Advances in diagnosis and treatment have improved survival rates [3],

yet many experience psychological challenges, including heightened anxiety, depression, and distress [4, 5], reduced quality of life [6, 7], and psychological strain related to uncertainty and masculinity [4, 8, 9].

Identifying psychological mechanisms contributing to these outcomes is crucial for enhancing support for this

population. Prior research has highlighted several key factors of relevance, including masculinity [4, 10], intolerance of uncertainty (IoU) [11, 12], and coping [13, 14]. However, few studies have examined these collectively or within an integrated framework. Psychological flexibility (PF), the core process underlying Acceptance and Commitment Therapy (ACT) [15–17], may offer such a framework for understanding these interrelated constructs and promoting adaptive adjustment.

PF refers to the capacity to remain open and present with internal experiences while acting in alignment with personally meaningful values [15]. A substantial body of research highlights PF as a transdiagnostic resilience factor. Greater PF has been consistently linked to less psychological distress [18–20] and to positive outcomes such as healthy aging and greater life satisfaction [20]. In PCa specifically, PF predicts lower distress and greater quality of life and buffers negative effects of fear of cancer recurrence and diminished masculine self-esteem (MSE) [21, 22]. Given its theoretical and empirical significance, PF may serve as a protective factor that enables men to flexibly navigate the psychosocial demands of PCa.

PCa is often experienced as a threat to masculinity, resulting in emotional strain and impeding psychological adjustment [8, 23, 24]. It is important to note that masculinity is a multifaceted construct encompassing both men's internalized masculine ideals (their beliefs about what it means to be masculine) and self-appraisals of how masculine they perceive themselves to be. At a cultural level, traditional masculine ideals privilege traits such as physical strength, sexual competence, autonomy, and emotional stoicism [25, 26]. However, PCa and its treatment-related side effects (e.g., sexual dysfunction, loss of libido, or urinary incontinence) often disrupt men's ability to maintain these valued aspects of masculinity. Moreover, internalized masculine norms or beliefs can shape men's coping strategies in the face of health challenges. For example, valuing self-reliance may discourage emotional disclosure or help-seeking, hindering psychological adjustment [27, 28]. However, some studies have reported nonsignificant psychological impacts of masculine norms conformity in PCa [29, 30], suggesting that it may be the rigidity of adherence, rather than the norms themselves, that is problematic [31, 32]. Supporting this, Aharon et al. [33] found that the positive association between masculine norms conformity and distress was significant only among those low in PF. This suggests that PF may enable more adaptive engagement with masculine norms.

MSE, in contrast, reflects men's evaluative sense of their self-worth or adequacy as men [34]. This construct is also critical for understanding men's adjustment following PCa. Research has consistently shown that diminished MSE is associated with greater distress and poorer well-being [34–37], with longitudinal evidence suggesting that such perceived threats to masculine identity may have enduring impacts by limiting emotional processing [10]. Importantly, PF has also shown to attenuate the negative effects of low MSE [21]. Together, these findings highlight masculinity as a multidimensional construct comprising both

internalized masculine identity and self-evaluative MSE, each potentially influencing adjustment through distinct psychological pathways. In the context of PCa, understanding how these facets of masculinity operate alongside other psychological factors is critical for clarifying men's adjustment and identifying potential therapeutic targets.

Given the disease's varied prognoses and risk of recurrence [38–40], uncertainty is a nearly universal and often stressful experience in the context of PCa. Greater illness-related uncertainty is consistently associated with elevated distress and lower quality of life among individuals with PCa and other conditions [13, 41, 42]. Navigating this uncertainty requires men to appraise and respond to it in an adaptive manner [43]. This makes IoU, the dispositional tendency to experience uncertain situations as unacceptable or aversive [11, 44], particularly relevant to those with PCa. IoU is considered a key vulnerability factor and has been associated with greater distress and increased reliance on maladaptive coping across various health-related contexts [11, 12, 45–47]. In PCa, difficulty tolerating uncertainty has been shown to significantly predict cancer-related distress and anxiety across treatment modalities [48, 49].

While these findings suggest that IoU contributes to poorer psychological outcomes, the underlying mechanisms remain underexplored. Coping, avoidant coping in particular, may be one potential pathway. For example, greater use of avoidant coping has been shown to mediate the relationship of perceived illness uncertainty and worse well-being [13]. However, it remains unclear as to whether coping mediates the links between IoU and psychological outcomes. At the same time, PF may be a protective factor by promoting acceptance, openness, and active engagement with life [20]. Rather than ruminating over or attempting to control or eliminate uncertainty, psychologically flexible individuals can engage with it constructively. Preliminary evidence suggests that PF can buffer the negative impacts of uncertainty-related stressor, such as fear of cancer recurrence in men with PCa [22], though this has not been tested directly in relation to IoU.

Coping strategies are central to psychological adjustment to PCa and are shaped by masculinity-related constructs and IoU. Coping is often broadly categorized as avoidant (e.g., distraction, emotional suppression) or approach coping (e.g., problem solving, seeking support) [50, 51]. While avoidance may provide temporary relief, multiple clinical samples reported its consistent associations with poorer long-term outcomes [13, 52–54].

Evidence on active coping is more mixed. Non-significant relationships with distress have been reported in head and neck cancer [54] and mixed cancer samples [53], whereas weak positive correlations with well-being have been observed in community samples [52] and men with PCa [13]. These inconsistencies likely reflect the context-dependent nature of coping. For instance, disclosing cancer-related concerns can aid adjustment when met with understanding [55, 56] but may be less effective in unsupportive environments [57]. This highlights the importance of flexibility in deploying coping strategies

according to situational demands. PF may therefore be particularly important, as it enables men to shift away from unhelpful coping applied rigidly and instead adopt coping responses that are more adaptive and context-sensitive.

Taken together, the literature indicates that masculine identity, MSE, and IoU may influence psychological outcomes in PCa not only directly but also indirectly through coping. In addition, PF may function as a resilience factor that shapes how men navigate these challenges. In spite of emerging support for this integrative perspective, these constructs have largely been studied in isolation. No study to date has examined these processes collectively. This limits our understanding of how best to support men psychologically as they navigate PCa-related challenges, particularly those related to masculinity and uncertainty. Addressing this gap is therefore critical for improving supportive care.

The present study aims to address these gaps by examining how masculinity, IoU, coping strategies, and PF interact to influence psychological distress and mental well-being in men with PCa. This understanding will be valuable for informing more targeted psychological interventions for men with PCa. Specifically, this research could guide the development of tailored ACT-based interventions that foster flexibility, reduce distress, and enhance well-being. This is particularly timely given the growing need for supportive care in this population. We specifically hypothesized that: (1) PF, masculinity, and approach coping would positively predict mental well-being and negatively predict psychological distress; (2) IoU and avoidant coping would negatively predict mental well-being and positively predict psychological distress; (3) PF as an overarching protective factor would remain a unique, significant predictor of distress and well-being beyond other predictors; and (4) PF would moderate both direct and indirect (via coping) effects of masculinity and IoU on distress and well-being.

2. Methods

2.1. Design. This study adopted a cross-sectional survey design. Ethical approval was obtained from the School of Health in Social Science Research Ethics Committee, the University of Edinburgh, on 19 June 2023 (Ref: 22-23CLPS118).

2.2. Sample Size. Power analyses were carried out prior to participant recruitment using G*Power for correlation and multiple regression analyses [58] and Monte Carlo simulation for mediation analyses [59]. Given that prior studies examining the key psychological variables in this study generally reported effect sizes in the small-to-medium range [10, 12, 13, 21, 22], we used a medium effect size estimate for power calculations which showed that 141 participants were needed to detect medium effect sizes at an alpha level of 0.05 ($p < 0.05$) and a power of 0.80.

2.3. Participants. Participants were eligible if they had received a diagnosis of PCa and were aged 18 years or older. Convenience sampling using a snowball technique was conducted to recruit participants. A poster with a link to the participant information sheet was distributed via social media (e.g., Facebook and X) and relevant online forums (e.g., Prostate Cancer UK, Prostate Scotland, and Prostate Cancer Research). Participants accessed the survey questionnaire following completion of an online informed consent form. A battery of validated self-report measures and demographic questions was presented in an online survey hosted on Qualtrics (<https://www.qualtrics.com/uk/>).

2.4. Patient and Public Involvement. Three patient representatives with lived experience of PCa confirmed the importance and relevance of the concepts examined in the study to men with PCa. They advised on research design, participant recruitment, early report drafts, and results dissemination.

2.5. Measures. To maximize domain coverage while minimizing response burden, short-form versions of validated measures were used where possible.

Demographics and clinical information. (1) Basic demographics, including age, country of residence, ethnicity, sexual orientation, education, employment status, and relationship status; (2) Clinical information, including time since diagnosis, cancer stage when diagnosed, treatment(s) received, treatment completed or not, experience of cancer recurrence, familial history of PCa, any diagnosis of mental disorders, and any psychological intervention received; (3) Severity of PCa symptoms concerning pain, energy, urinary, bowel, and sexual dysfunction; and (4) Any recent life events beyond PCa that may negatively affect participant's mental health.

Masculinity in Chronic Disease Inventory (MCD-I) [60] is a 22-item scale assessing masculine identity in the context of chronic disease and has been previously validated among men with PCa. The measure captures beliefs, ideals, and priorities reflecting masculine identity across five domains: Strength/fitness, sexual priority/importance, family responsibility, emotional self-reliance, and optimistic action. For brevity, this construct is referred to as *masculine identity* throughout the current study. Items are rated on a five-point Likert scale, ranging from 1 = "not at all true" to 5 = "very true." Subscale scores are calculated by averaging item responses, with greater scores indicating greater importance of these domains. In the current sample, Cronbach's alphas for the five subscales ranged between 0.68 and 0.88, and it was 0.88 for overall scale.

Masculine Self-esteem subscale of the PCa-related quality of life scales [34] consists of eight items that assess men's subjective evaluations of MSE (e.g., "I feel as if I am no longer a whole man") using a five-point Likert scale (1 = "not at all" to 5 = "very much"). Reversed score was performed such that higher scores indicate better MSE. Cronbach's alpha for the present sample was 0.92.

Intolerance of Uncertainty Scale-12 (IUS-12) [61] measures to what extent an individual finds uncertain or ambiguous situation intolerable or unacceptable (e.g., “Unforeseen events upset me greatly”) on a five-point scale from 1 = “not characteristic of me at all” to 5 = “entirely characteristic of me.” Higher scores indicate greater IoU. Cronbach’s alpha for the present sample was 0.86.

Psy-Flex [62] is a six-item self-report measure used to assess PF over the past week using a five-point scale that ranges from 1 = “very seldom” to 5 = “very often.” Higher scores indicate greater PF. Cronbach’s alpha for the present sample was 0.83.

Brief COPE [50] is a 28-item self-report measure that assesses the frequency of the use of 14 coping strategies. Items were assessed on a four-point scale (1 = “I have not been doing this at all” to 4 = “I have been doing this a lot”). Instructions were adapted to reflect on participants’ experience in the context of PCa. Higher scores indicate greater use of coping strategies. Cronbach’s α for the current sample was 0.79 for approach coping and 0.72 for AVO.

The Short-Form Version of Depression Anxiety Stress Scales (DASS-21) [63] consists of three 7-item subscales and assesses the extent to which a person experienced symptoms of depression, anxiety, and stress over the past week using a four-point scale (0 = “did not apply to me at all” to 3 = “applied to me very much or most of the time”). Higher scores indicate greater psychological distress. Cronbach’s alpha for the present sample was 0.95.

Warwick-Edinburgh Mental Well-being Scale (WEMWBS) [64] is a 14-item scale measuring mental well-being over the past 2 weeks using a five-point scale (1 = “none of the time” to 5 = “all of the time”). Higher scores indicate greater mental well-being. Cronbach’s alpha for the present sample was 0.94.

2.6. Data Analytical Strategies. Data were primarily analyzed using R Statistical Software (v4.2.1) [65] and SPSS (Version 29) for conditional process analyses.

2.6.1. Missing Data. We planned to exclude cases with more than 10% missing data, following Bennett [66], yet no cases were excluded for this reason. Eleven missing values present in seven cases accounted for 0.05% of the total dataset. Little’s MCAR test was performed and confirmed that the data were missing completely at random, $\chi^2_{(698)} = 729$, $p = 0.20$. Missing data were handled using multiple imputation. Ten imputed datasets were generated using the Amelia package [67] based on an Expectation-Maximization with Bootstrapping algorithm. Diagnostic checks indicated a good fit between the imputation model and observed data.

2.6.2. Bivariate Correlations. Pearson’s correlation coefficients were used to inform subsequent regression analyses. Correlation effect sizes were analyzed using Cohen’s [68] thresholds. Given the multidimensional nature of the MCD-I, exploratory correlations between its five subscales and the key study variables were also reported. These

analyses are presented descriptively to illustrate potential domain-level patterns, whereas our primary regression models remained focused on the composite constructs to preserve parsimony and statistical power.

2.6.3. Hierarchical Multiple Regression. Prior to hypothesis testing, a range of demographic and clinical factors, including age, time since diagnosis, cancer stage, PCa symptoms, treatment status, recent adverse events, and relationship status, were checked for their effects on distress and well-being.

Two four-step hierarchical multiple regression analyses were performed to examine the relative importance of psychological factors in predicting outcomes and whether PF explains additional variance beyond demographic and other psychological predictors. Predictors not significantly correlated with distress or well-being were excluded to preserve power. Relevant demographic factors were entered first as control variables, followed by masculinity and IoU as dispositional predictors. Coping strategies, as behavioral variables, were then entered. PF was entered last. Model validity was assessed by comparing R^2 and adjusted R^2 for any shrinkage. Outliers were checked by looking at standardized residuals, leverage, and Cook’s distance. Final regression models were checked to ensure that all assumptions of regression were met.

Given the established importance of sexual dysfunction to masculine identity and broader psychological adjustment in PCa [69–71], we conducted supplementary analyses to examine whether it should be treated separately from other physical symptoms.

2.6.4. Conditional Process Analysis. Conditional process analyses were undertaken to examine whether masculinity and IoU influenced distress and well-being through coping strategies, and whether PF moderated these direct and indirect effects. The tested conditional process models were informed by final hierarchical regression models, and their conceptual diagrams are shown in Figure 1. Conditional process analyses were conducted using Hayes’ PROCESS macro (Version 4.2; [72]) in SPSS (Version 29), with PCa symptoms included as a covariate.

3. Results

3.1. Sample Characteristics. Of the 247 individuals who accessed the survey, 162 completed all measures and comprised the final study sample. Participants had a mean age of 64.7 years ($SD = 7.79$; range 47–84). The majority identified as White (97.5%) and heterosexual (95.1%). Most were married or partnered (91.4%), resided in the United Kingdom (92%), and had received one form of active treatment (92.9%). Time since diagnosis ranged from 1 to 260 months ($M = 42.40$, $SD = 47.56$). At diagnosis, 30.2% had advanced PCa, whereas 69.8% had localized cancer. At recruitment, 59.2% had completed treatment, 36.1% were undergoing treatment, and 4.8% had not started treatment. Detailed participant demographics are presented in Table 1

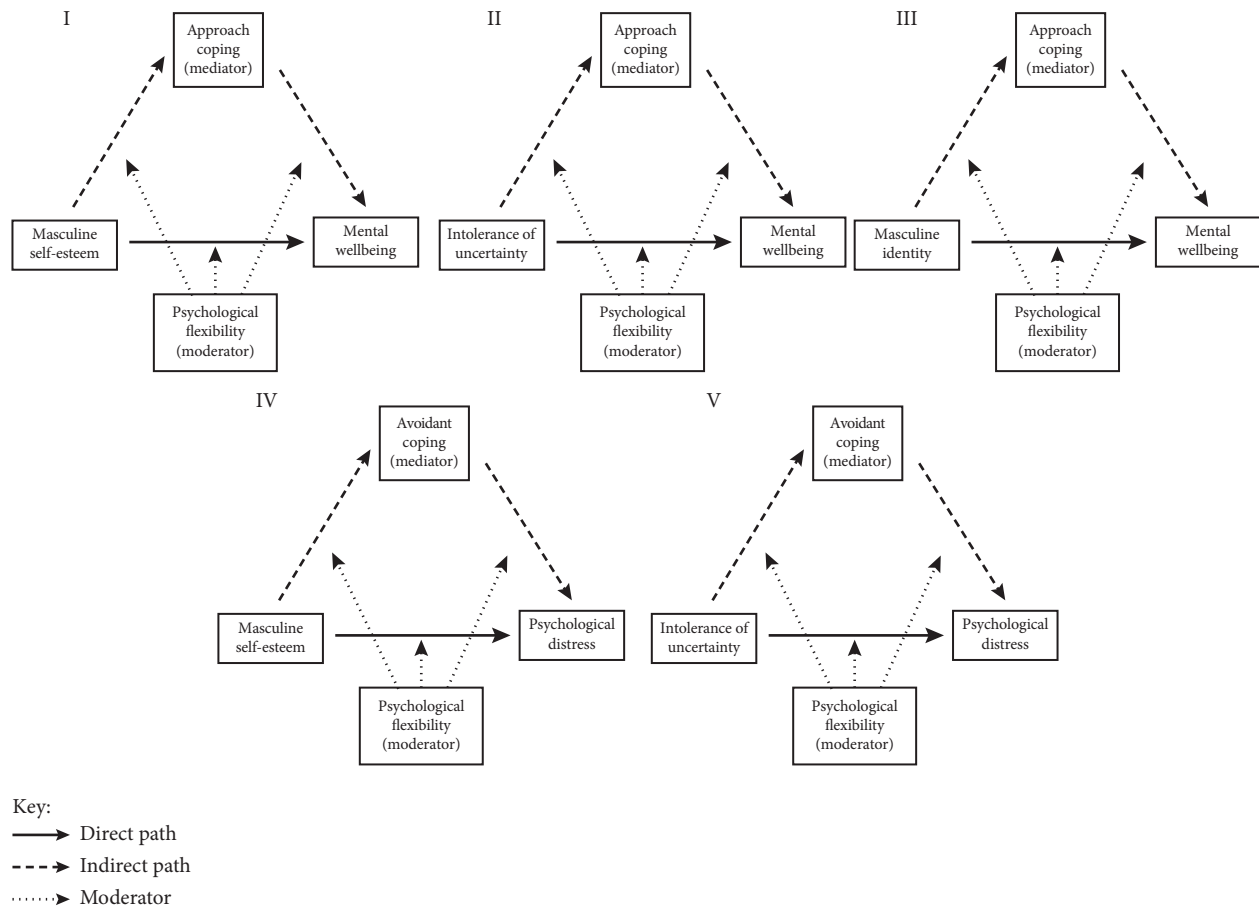


FIGURE 1: Conceptual diagrams of hypothesized conditional process models.

and descriptive statistics and internal consistencies of the measures are presented in Table 2.

3.2. Correlation. A bivariate correlation matrix is presented in Table 3. All predictors showed moderate to strong significant correlations with mental well-being, except for masculine identity, which was weakly but significantly correlated with well-being ($r = 0.17$, $p < 0.05$). All predictors except approach coping ($r = -0.10$) and masculine identity ($r = -0.11$) showed moderate to strong significant correlations with psychological distress. MCD-I subscales demonstrated distinct relationships with symptom and adjustment outcomes. Specifically, optimistic action correlated positively with PF and well-being, and negatively with distress. In contrast, emotional self-reliance was negatively associated with approach coping and PF, while sexual importance/priority was modestly related to sexual dysfunction.

3.3. Hierarchical Multiple Regression. Although sexual dysfunction significantly correlated with distress ($r = 0.30$, $p < 0.01$) and well-being ($r = -0.25$, $p < 0.01$), it did not uniquely predict distress ($\beta = 0.06$, $p = 0.28$) or well-being ($\beta = -0.03$, $p = 0.69$). In contrast, the composite score of PCa symptoms significantly and uniquely predicted both

outcomes. This suggests that sexual dysfunction alone may not exert a unique influence on men's psychological adjustment, while broader physical disruptions related to PCa appear to play a stronger role. We therefore retained the composite score of PCa symptoms to capture the cumulative impact of diverse physical challenges and included this variable as a covariate in the subsequent conditional process analyses. No other demographic or clinical factors were identified as covariates.

The final model (Table 4) predicting psychological distress was significant, $F(5, 156) = 53.34$, $p < 0.001$, and explained 61.9% of the variance. PCa symptoms ($\beta = 0.17$, $p = 0.001$), MSE ($\beta = -0.38$, $p < 0.001$), IoU ($\beta = 0.19$, $p < 0.001$), avoidant coping ($\beta = 0.21$, $p = 0.003$), and PF ($\beta = -0.18$, $p < 0.001$) all significantly predicted distress. Notably, adding PF led to a significant increase in explained variance ($\Delta R^2 = 2.7\%$, $p < 0.001$), indicating its incremental predictive value beyond previously entered variables.

The final model (Table 5) predicting mental well-being was also significant, $F(8, 153) = 23.45$, $p < 0.001$, and explained 52.7% of the variance. PCa symptoms ($\beta = -0.15$, $p = 0.02$), MSE ($\beta = 0.42$, $p < 0.001$), masculine identity ($\beta = 0.17$, $p = 0.005$), IoU ($\beta = -0.14$, $p = 0.02$), approach coping ($\beta = 0.15$, $p = 0.02$), and PF ($\beta = 0.25$, $p < 0.001$) significantly predicted mental well-being. Age and AVO did not significantly predict well-being in the final model.

TABLE 1: Sociodemographic and clinical characteristics of participants.

Characteristic	<i>n</i>	%
Age: Mean 64.7 (SD 7.79; range 47–84)		
Ethnicity		
White	158	97.5
Other	4	2.5
Place of residence		
United Kingdom (England)	113	72
United Kingdom (Scotland)	31	20
United States of America	7	4
Other	7	4
Sexual orientation		
Heterosexual or straight	154	95.1
Homosexual or gay	5	3.1
Bisexual	2	1.2
Prefer not to say	1	0.6
Highest education		
Less than secondary education (e.g., primary education)	29	17.9
Compulsory secondary education (e.g., GCSEs)	50	30.9
Bachelor's degree	41	25.3
Master's degree	27	16.7
Doctoral degree or higher	15	9.3
Employment status		
Retired	90	55.6
Employed full-time	54	33.3
Employed part-time	14	8.6
Unemployed	4	2.5
Relationship status		
Partnered (mean of relationship length in years 33, SD 14.65; range 3–58)	148	91.4
Unpartnered	14	8.6
Months since diagnosis: Mean 42.40 (SD 47.56; range 1–260)		
Cancer stage when initially diagnosed		
Localized or early	113	69.8
Metastatic or advanced	49	30.2
Treatment completed or not		
Treatment completed	87	59.2
Under treatment	53	36.1
Treatment not started	7	4.8
Treatment modality		
Hormone therapy	73	47.1
Prostatectomy or surgery	68	43.9
Radiotherapy	56	36.1
Chemotherapy	24	15.5
Active surveillance or watchful waiting	11	7.1
Other	15	9.7
Mental health conditions		
Yes	21	13
No	141	87

Adding PF led to a significant increase in explained variance ($\Delta R^2 = 4.6\%$, $p < 0.001$), indicating its incremental predictive value beyond previously entered variables.

3.4. Conditional Process Analysis. Contrary to expectations, approach coping did not significantly mediate the effects of MSE, IoU, or masculine identity on well-being. Therefore, models I, II, and III in Figure 1 were not supported.

As expected, avoidant coping significantly mediated the effect of MSE on distress (Table 6). Overall, the model explained 59.3% of the variance in distress, $F(6, 155) = 37.69$, $p < 0.001$.

While PF did not moderate the direct path from MSE to distress, it significantly moderated the indirect relationship through avoidant coping. The indirect path became non-significant at a high level of PF (a standard deviation above the mean). The model diagram is presented in Figure 2.

TABLE 2: Descriptive statistics and internal consistency for key variables ($N = 162$).

Variable	Min	Max	Mean	SD	α	Normative data	
						Mean	SD
Predictor variables							
Approach coping	32	72	49.27	8.37	0.79	32.2 ^a	7.4
Avoidant coping	8	28	13.8	4.13	0.72	14.6 ^a	3.9
Masculine identity	1.98	4.78	3.7	0.56	0.88	3.77 ^b	0.56
Masculine self-esteem	9	40	29.26	8.29	0.92	28.14 ^c	7.43
Intolerance of uncertainty	14	57	30.61	7.81	0.86	24.58 ^d	7.68
Psychological flexibility	8	30	21.97	4.78	0.83	20.4 ^e	4.3
Physical symptoms	7	31	17.7	5.60			
Outcome variables							
Psychological distress	0	110	26.98	23.45	0.95	22.59 ^f	24.63
Mental well-being	19	70	49.39	9.98	0.94	52.8 ^g	8.5

^aBrief COPE normative data from Guan et al. [13].

^bMCI-D normative data from Occhipinti et al. [73].

^cMSE normative data from McAteer and Gillanders [21].

^dIUS-12 normative data from Panjwani et al. [12] (clinical sample with advanced cancer).

^ePsy-Flex normative data from Gloster et al. [62] (community sample).

^fDASS21 normative data from McAteer and Gillanders [21].

^gWEMWBS normative data from Sarasjärvi et al. [74] (nationally representative adult sample).

Likewise, avoidant coping mediated the effect of IoU on distress (Table 7). Overall, the model explained 59.0% of variance in distress, $F(6, 155) = 37.22$, $p < 0.001$.

PF significantly moderated the direct relationship from IoU to distress, such that the direct path became non-significant at a high level of PF. The model diagram is presented in Figure 3.

3.5. Exploratory Moderation Analysis. After identifying three unsupported moderated mediation models, we simplified models to assess whether PF moderated the effects of MSE, masculine identity, and IoU on mental well-being. Controlling for PCa symptoms, PF significantly moderated the association between MSE and well-being, $B = -0.03$, $t = -2.10$, $p = 0.04$, such that the positive association became weaker as PF increased. However, no significant moderating effects were found for masculine identity ($B = -0.13$, $t = -0.52$, $p = 0.61$) or IoU ($B = 0.004$, $t = 0.27$, $p = 0.79$) on mental well-being.

4. Discussion

This study builds upon and extends prior research on psychological adjustment in men with PCa by demonstrating that MSE, IoU, and avoidant coping played a significant role in distress, whereas PF served as a key resilience factor. As expected and supporting previous research [34–36], we found that lower MSE was strongly associated with greater distress and poorer well-being. Moreover, MSE emerged as the strongest predictor of both outcomes, highlighting masculinity-related concerns as a salient issue for men with PCa. PF moderated the relationships between MSE and both distress and well-being, extending previous findings [21]. Specifically, individuals with higher PF relied less on MSE to achieve better psychological outcomes. PF also significantly weakened the impact of avoidant coping as the mechanism through which MSE predicted distress,

suggesting that avoidant coping may be less detrimental for individuals with higher PF. This supports the notion that the effectiveness of coping strategies may be context-dependent [18] and points to the potential of ACT-based interventions in supporting men with PCa.

Our findings underscore the importance of identifying men who perceive threats to their masculinity, as they may experience greater adjustment difficulties. Providing emotional support may be particularly beneficial for those struggling with masculinity-related concerns because of PCa. Healthcare providers could use validated measures of MSE to identify those requiring additional support refer them to interventions that specifically address masculinity-related problems. A systematic review showed that physical activity-based interventions improved men's sense of masculinity by encouraging reassessments of masculine values, with benefits observed across different cancer stages and treatment regimens [75]. Similarly, interventions designed to facilitate cognitive processing of traditional masculine norms in general male populations have also proven effective [76]. These programs also promote support-seeking behaviors, a form of approach coping. Although approach coping did not mediate the link between MSE and outcomes in our study, it remained a significant predictor of mental well-being. Therefore, fostering greater engagement in approach coping may still enhance men's well-being. Moreover, because increased avoidant coping mediated the relationship between lower MSE and greater distress, interventions targeting avoidant coping could be particularly beneficial.

Although sexual dysfunction is often emphasized as a central concern for men with PCa and is closely linked to masculine identity [71, 77, 78], our supplementary analyses indicated that it did not significantly predict distress or well-being. By contrast, men reporting greater levels of PCa-related physical symptoms tended to experience greater distress and lower well-being. These findings suggest that

TABLE 3: Pearson product-moment correlations ($N = 162$).

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. COPE: Approach coping	1												
2. COPE: Avoidant coping	-0.03	1											
3. MCD-I total: Masculine identity	0.16*	-0.02	1										
4. MSE: Masculine self-esteem	0.04	-0.62***	-0.17*	1									
5. IUS-12: Intolerance of uncertainty	-0.16*	0.37***	0.07	-0.33***	1								
6. Psy-Flex: Psychological flexibility	0.33***	-0.32***	0.19*	0.28***	-0.27***	1							
7. DASS-21: Psychological distress	-0.10	0.57***	-0.11	-0.69***	0.47***	-0.43***	1						
8. WEMWBS: Mental well-being	0.31***	-0.42	0.17*	0.57***	-0.37***	0.51***	-0.73***	1					
9. MCD-I: Strength/fitness	0.26**	-0.07	0.70***	-0.08	0.02	0.19*	-0.10	0.19*	1				
10. MCD-I: Sexual priority/importance	0.16*	0.16*	0.69***	-0.35***	0.02	0.14	0.04	-0.04	0.26**	1			
11. MCD-I: Emotional self-reliance	-0.36***	0.15	0.33***	-0.14	0.19*	-0.23***	0.13	-0.18*	-0.10	-0.01	1		
12. MCD-I: Family responsibility	0.16*	-0.08	0.67***	-0.03	0.07	0.15	-0.11	0.19*	0.40***	0.18*	0.07	1	
13. MCD-I: Optimistic action	0.36***	-0.39***	0.64***	0.26**	-0.16*	0.42***	-0.45***	0.54***	0.51***	0.26**	-0.10	0.51***	1
<i>Demographic covariates</i>													
Age	-0.13	-0.18*	-0.16*	0.28***	-0.05	0.15	-0.13	0.16*	-0.09	-0.32***	0.04	-0.06	0.04
Time since diagnosis	-0.06	-0.06	-0.06	0.05	-0.07	0.12	-0.05	0.06	0.51***	0.26**	-0.10	0.51***	0.05
Physical symptoms	0.02	0.19***	-0.17*	-0.40***	0.11	-0.18*	0.43***	-0.41***	-0.17*	-0.27**	0.13	0.01	-0.18*
Sexual dysfunction	-0.16*	0.25**	-0.22*	-0.31***	0.06	-0.05	0.30**	-0.25**	-0.16*	-0.26**	0.06	-0.10	-0.20**

Note: COPE = Brief COPE [50]; MCD-I = masculinity in chronic disease inventory [60]; MSE = masculine self-esteem subscale of the PCA-related quality of life scales [34]; IUS-12 = Intolerance of Uncertainty Scale-12 [61]; Psy-Flex = Psy-Flex [62]; DASS-21 = The short-form version of Depression Anxiety Stress Scales [63]; WEMWBS = Warwick-Edinburgh Mental Well-Being Scale [64].

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 4: Hierarchical multiple regression analysis to predict psychological distress.

Step	Variables	<i>B</i>	β	<i>t</i>	<i>p</i>	<i>R</i> ²	Adj. <i>R</i> ²	Δ <i>R</i> ²	<i>F</i> (<i>k</i> , 162- <i>k</i>)	<i>p</i>
1	Physical symptoms	1.82	0.43	6.11	< 0.001	0.19	0.18		37.29	< 0.001
2	Physical symptoms	0.84	0.20	3.54	< 0.001	0.57	0.57	0.38	70.91	< 0.001
	Masculine self-esteem	-1.45	-0.51	-8.61	< 0.001					
	Intolerance of uncertainty	0.84	0.28	5.10	< 0.001					
3	Physical symptoms	0.78	0.19	3.39	< 0.001	0.60	0.59	0.03	59.92	< 0.001
	Masculine self-esteem	-1.10	-0.39	-5.76	< 0.001					
	Intolerance of uncertainty	0.72	0.24	4.38	< 0.001					
	Avoidant coping	1.30	0.23	3.47	< 0.001					
4	Physical symptoms	0.73	0.17	3.26	0.001	0.63	0.62	0.03	53.34	< 0.001
	Masculine self-esteem	-1.07	-0.38	-5.73	< 0.001					
	Intolerance of uncertainty	0.63	0.19	3.94	< 0.001					
	Avoidant coping	0.05	0.21	0.27	0.003					
	Psychological flexibility	-0.87	-0.18	-3.36	< 0.001					

TABLE 5: Hierarchical multiple regression analysis to predict mental well-being.

Step	Variables	<i>B</i>	β	<i>t</i>	<i>p</i>	<i>R</i> ²	Adj. <i>R</i> ²	Δ <i>R</i> ²	<i>F</i>	<i>p</i>
1	Age	0.27	0.21	2.97	0.003	0.21	0.20		21.18	< 0.001
	Physical symptoms	-0.77	-0.43	-0.61	< 0.001					
2	Age	0.11	0.09	1.35	0.17	0.46	0.44	0.25	26.65	< 0.001
	Physical symptoms	-0.32	-0.18	-2.61	0.009					
	Masculine self-esteem	0.54	0.45	6.06	< 0.001					
	Masculine identity	4.34	0.24	3.95	< 0.001					
	Intolerance of uncertainty	-0.27	-0.21	-3.37	< 0.001					
3	Age	0.14	0.11	1.76	0.08	0.51	0.48	0.04	22.47	< 0.001
	Physical symptoms	-0.28	-0.16	-2.38	0.02					
	Masculine self-esteem	0.54	0.45	5.46	< 0.001					
	Masculine identity	3.81	0.21	3.52	< 0.001					
	Intolerance of uncertainty	-0.22	-0.17	-2.79	0.006					
	Approach coping	0.26	0.22	3.72	< 0.001					
	Avoidant coping	0.01	0.004	0.06	0.96					
4	Age	0.09	0.07	1.19	0.24	0.55	0.53	0.05	23.45	< 0.001
	Physical symptoms	-0.27	-0.15	-2.43	0.02					
	Masculine self-esteem	0.51	0.42	5.35	< 0.001					
	Masculine identity	2.99	0.17	2.83	0.005					
	Intolerance of uncertainty	-0.18	-0.14	-2.37	0.02					
	Approach coping	0.17	0.15	2.46	0.02					
	Avoidant coping	0.11	0.05	0.64	0.52					
	Psychological flexibility	0.52	0.25	3.94	< 0.001					

while sexual function may be highly salient for some, broader embodied disruptions such as fatigue, pain, or urinary difficulties can similarly undermine men's well-being, potentially by threatening their capacity to enact internalized masculine norms of autonomy, strength, and

control. This highlights the importance of recognizing the varied ways in which PCa challenge men's sense of masculinity and ensuring that support is not narrowly focused on sexual rehabilitation but also addresses other embodied changes. Future research should therefore examine how men

TABLE 6: Standardized regression coefficients with confidence intervals estimating the effects of masculine self-esteem predicting distress moderated by psychological flexibility and mediated by avoidant coping.

	β	SE	p	BCILL	BCIUL
Constant	13.73	4.31	0.002	5.76	22.66
Masculine self-esteem (MSE)	-0.96	0.19	< 0.001	-1.36	-0.62
Avoidant coping (AVO)	1.45	0.47	< 0.001	0.51	2.35
Psychological flexibility (PF)	-1.15	0.29	< 0.001	-1.76	-0.61
PF * MSE	0.04	0.05	-0.04	-0.05	0.13
PF * AVO	-0.13	0.10	-0.29	-0.30	-0.09
PCa symptoms (covariate)	0.68	0.24	0.004	-0.19	1.13

Abbreviations: BCI=bootstrapped confidence interval, LL=lower limit, and UL = upper limit.

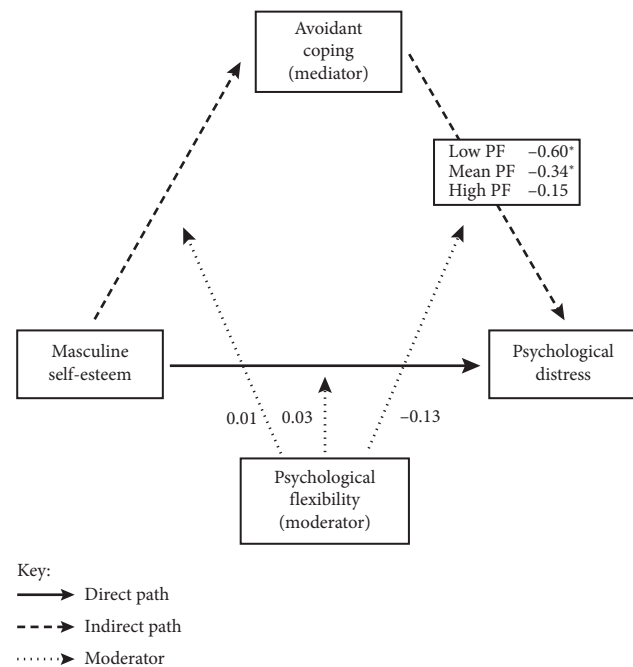


FIGURE 2: Conditional process analysis of effects of masculine self-esteem on distress. Numbers on the paths represent standardized β coefficients, * $p < 0.05$.

with PCa interpret changes in sexual function relative to other physical disruptions through the lens of masculinity, and how these interpretations shape their psychological adjustment.

Supporting our hypothesis, masculine identity predicted well-being. However, this effect was neither mediated by coping nor moderated by PF. One possibility is that endorsement of masculine norms fosters resilience through mechanisms beyond coping strategies, such as providing a sense of belonging or competence, which contribute to mental well-being [79, 80]. These benefits may be relatively independent of individuals' ability to flexibly adapt to psychological challenges. In addition, when facing health

TABLE 7: Standardized regression coefficients with confidence intervals estimating the effects of intolerance of uncertainty predicting distress moderated by psychological flexibility and mediated by avoidant coping.

	β	SE	p	BCILL	BCIUL
Constant	5.48	4.50	0.20	-2.56	15.13
Intolerance of uncertainty (IoU)	0.73	0.19	< 0.001	0.35	1.09
Avoidant coping (AVO)	1.95	0.37	< 0.001	1.29	2.76
Psychological flexibility (PF)	-0.95	0.32	< 0.001	-1.63	-0.36
PF * IoU	-0.08	0.04	0.02	-1.17	-0.001
PF * AVO	-0.13	0.08	0.07	-0.28	-0.03
PCa symptoms (covariate)	1.12	0.24	< 0.001	0.62	1.57

Abbreviations: BCI=bootstrapped confidence interval, LL=lower limit, and UL = upper limit.

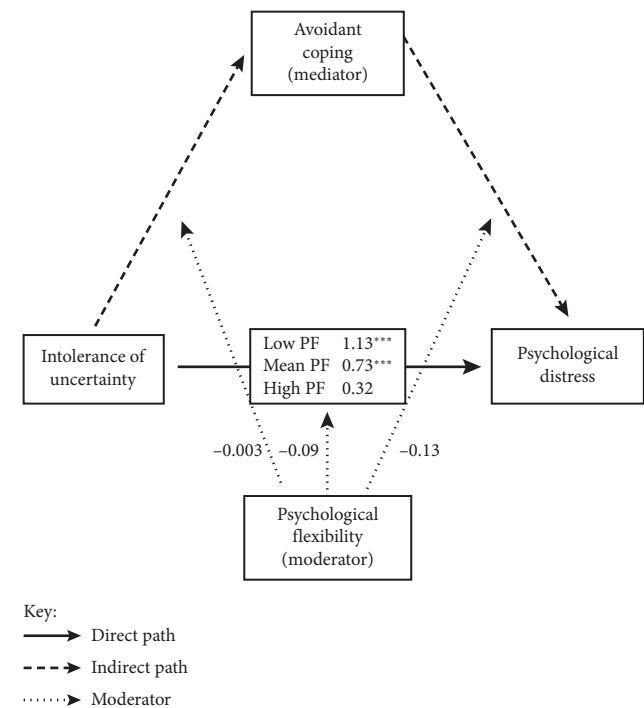


FIGURE 3: Conditional process analysis of effects of intolerance of uncertainty on distress. Numbers on the paths represent standardized β coefficients, *** $p < 0.001$.

challenges, men may selectively attach importance to different masculine ideals, norms, or values they hold. For instance, they may prioritize strength over self-reliance, which encourage proactive support-seeking and promote well-being [28, 81]. In this context, men may already engage with challenges in a way that aligns with their beliefs about strength and resilience, minimizing the need for additional flexibility. Alternatively, it may be that the measure of well-being failed to fully capture men's psychological experiences. Since traditional masculine norms often emphasize strength, emotional control, and self-reliance [26], men attaching

greater importance to these norms may overstate well-being as a covert means of asserting masculinity. As such, their reported well-being may reflect the extent to which masculine identity meant to them rather than their actual psychological state.

Interestingly, we observed a significant negative correlation between masculine identity and MSE. Although small, this effect mirrored previous findings that endorsing traditional masculine norms inversely predicted MSE in men undergoing androgen deprivation therapy for PCa [82]. These findings can be understood through the lens of Gender Role Strain Theory, which posits that failure to live up to internalized masculine norms can lead to psychological strain [79, 83]. This is particularly relevant for men with PCa, as the disease often imposes physical limitations that make it difficult to embody certain masculine norms, such as self-reliance or sexual prowess [84–86]. This discrepancy between internalized masculine norms and lived reality may contribute to diminished MSE. As such, men may benefit from psychological interventions that help them engage with masculine norms in ways consistent with the realities of living with cancer. Useful approaches can involve encouraging men to reflect on the helpfulness of such norms and to construct new narratives of being a man that incorporate aspects of help seeking, support receiving, and allowing vulnerability to foster personal growth and change.

Our study reaffirmed the positive association between IoU and distress, aligning with prior studies [48, 49]. It extends the literature by identifying avoidant coping as a key mechanism underlying this relationship. Specifically, men who had difficulty tolerating uncertainty were more likely to use avoidant coping, which in turn exacerbated their distress. Conditional process analysis revealed that the direct path from IoU to distress was significant only among individuals with low to moderate PF, suggesting that PF can mitigate the adverse impacts of IoU and should be considered as a valuable therapeutic target. However, PF did not moderate its indirect effect via avoidant coping, indicating that reducing avoidant coping remains important. Given these findings, encouraging men to develop skills that help them open up to uncertainty, such as acceptance and cognitive reappraisal, may mitigate distress and enhance well-being [17, 87]. In line with this, ACT-based interventions may be particularly effective in enhancing acceptance and reducing avoidant coping.

Our results also underscore the significance of enhancing men's tolerance of uncertainty. Empirical trials evaluating Cognitive-Behavioral Therapies and mindfulness-based interventions have reported improvements in tolerance of uncertainty as a secondary effect alongside reductions in anxiety and distress [88, 89]. More recently, a brief six-session intervention specifically targeting IoU demonstrated a moderated-sized positive effect relative to treatment as usual [90]. Although this study was conducted on a small group of individuals with multiple sclerosis ($n = 48$), it provided valuable preliminary evidence for effectiveness of such interventions, which could be adapted for men with PCa.

As hypothesized, PF uniquely predicted distress and well-being, above and beyond other predictors. This aligns

with existing literature [17, 20] and demonstrates the unique role of PF in shaping men's psychological outcomes following PCa. While masculinity, IoU, and coping all predicted distress and well-being, the ability to flexibly navigate the cancer experience remains crucial. Moreover, although PF did not moderate all direct and indirect pathways, it significantly moderated the effects of MSE and IoU on distress, demonstrating its significance as a protective factor.

Overall, our findings suggest that a range of approaches could be support adjustment to PCa, including cognitive reappraisal strategies, narrative and social norms-based strategies, acceptance- and mindfulness-based strategies, and behavioral approach or exposure-based strategies. In particular, PF should be prioritized as a therapeutic target. Unlike traditional Cognitive-Behavioral Therapies, which primarily target maladaptive thoughts or behaviors [91], ACT-based interventions explicitly aim to foster PF by encouraging open and flexible engagement with emotions and thoughts while acting in alignment with personal values [15, 16, 92, 93]. In this sense, ACT-based interventions may offer distinct benefits beyond those provided by interventions targeting masculinity or coping alone [15, 93].

To date, a number of meta-analyses have demonstrated beneficial effects of ACT-based interventions on psychosocial and physical outcomes across nonclinical populations and individuals with cancer or other conditions [94–100]. However, these meta-analyses included few or no individuals with PCa, indicating a still emerging field. Therefore, drawing a definitive conclusion regarding the effectiveness of ACT-based interventions for this population remains challenging. Nevertheless, considering the current findings and the well-established benefits of ACT interventions in other populations, encouraging the use of these interventions may be particularly effective in promoting psychological outcomes among men with PCa. Researchers should consider developing ACT-based interventions tailored for men with PCa and investigating their effectiveness and efficacy, ideally through large-scale randomized controlled trials.

4.1. Strengths and Limitations. The present study has several strengths. First, patient and public involvement practice confirmed the importance of this study and highlighted its relevance to men with PCa. Moreover, we used validated, context-sensitive measures, all of which demonstrated good to excellent internal consistency in our sample. While Brief COPE [50] was originally developed to assess general use of coping strategies, participants were explicitly instructed to reflect on these as responses to PCa challenges. Anchoring these measures to PCa experience enabled more contextually relevant insights and ensured that our findings accurately reflect men's experience within this specific context. Furthermore, a prior power analysis confirmed that the final sample was sufficient for the planned analyses.

Limitations should also be noted. The cross-sectional design precluded temporal or causal inferences. Although predictors and outcomes in our models were informed by previous research, we cannot determine whether changes in

psychological outcomes are driven by masculinity, IoU, coping, or PF, or whether these factors are themselves influenced by changes in well-being and distress. Future longitudinal studies are needed to establish causal pathways and to examine how these evolve over time as men cope with PCa. In addition, the sample was largely homogeneous in ethnicity, country of residence, sexual orientation, and relationship status, which may limit the generalizability of our findings to the broader PCa population.

4.2. Clinical Implications. Healthcare providers could identify men at greater risk of psychological distress, especially those who struggle to manage masculinity issues or to coexist with uncertainties following PCa. Men self-reporting lower levels of PF may also benefit from targeted support. Our findings showed that ACT- or mindfulness-based interventions may be particularly beneficial for this population. In addition, tailored interventions that directly address masculinity-related concerns or specifically improve tolerance of uncertainty could further facilitate positive psychological adjustment, providing healthcare professionals with multiple avenues to support their patients' or clients' well-being.

4.3. Future Research. First, longitudinal designs remain essential to establish temporal precedence among the factors examined in the current study and to inform appropriate interventions. Second, the scope of this study did not allow for detailed examination of masculine identity at the domain level. However, preliminary analyses indicated that different aspects of masculine identity were differentially associated with symptom and adjustment outcomes. Future research should therefore explore distinct patterns of masculine identity among men with PCa and examine how these patterns relate to psychological adjustment. Third, our study highlights that PF and ACT-based interventions warrant further investigation in men with PCa. Specifically, in spite of the well-established effectiveness of ACT-based interventions across heterogeneous cancer populations, there is limited existing evidence on men with PCa, so randomized controlled trials are needed to fill this evidence gap. Beyond assessing PF as a primary outcome, it would also be useful to examine whether ACT-based interventions improve tolerance of uncertainty or influence attitudes toward masculinity. In addition, future research should strive to recruit more diverse samples to determine whether the present findings generalize to the broader PCa population.

5. Conclusion

This study showed that masculinity, IoU, and coping were key predictors of distress and wellbeing among men with PCa, with PF explaining additional unique variance. Avoidant coping linked low MSE and high IoU to greater distress, while PF buffered these effects. These findings highlight PF as a central resilience factor and support the value of ACT-based interventions that enhance flexibility and tolerance of uncertainty, alongside approaches that

directly strengthen MSE, to promote psychological adjustment in men with prostate cancer.

Data Availability Statement

Data may be made available on reasonable request to the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

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References

- [1] P. Rawla, "Epidemiology of Prostate Cancer," *World Journal of Oncology* 10, no. 2 (2019): 63–89, <https://doi.org/10.14740/wjon1191>.
- [2] R. L. Siegel, K. D. Miller, N. S. Wagle, and A. Jemal, "Cancer Statistics, 2023," *CA: A Cancer Journal for Clinicians* 73, no. 1 (2023): 17–48, <https://doi.org/10.3322/caac.21763>.
- [3] R. L. Siegel, K. D. Miller, H. E. Fuchs, and A. Jemal, "Cancer Statistics, 2021," *CA: A Cancer Journal for Clinicians* 71, no. 1 (2021): 7–33, <https://doi.org/10.3322/caac.21654>.
- [4] J. Bowie, O. Brunckhorst, R. Stewart, P. Dasgupta, and K. Ahmed, "A Systematic Review of Tools Used to Assess Body Image, Masculinity and Self-Esteem in Men With Prostate Cancer," *Psycho-Oncology* 29, no. 11 (2020): 1761–1771, <https://doi.org/10.1002/pon.5518>.
- [5] S. K. Chambers, C. Pinnock, S. J. Lepore, S. Hughes, and D. L. O'Connell, "A Systematic Review of Psychosocial Interventions for Men With Prostate Cancer and Their Partners," *Patient Education and Counseling* 85, no. 2 (2011): e75–e88, <https://doi.org/10.1016/j.pec.2011.01.027>.
- [6] N. Ralph, S. K. Ng, L. Zajdlewicz, et al., "Ten-Year Quality of Life Outcomes in Men With Prostate Cancer," *Psycho-Oncology* 29, no. 2 (2020): 444–449, <https://doi.org/10.1002/pon.5255>.
- [7] D. P. Smith, M. T. King, S. Egger, et al., "Quality of Life Three Years After Diagnosis of Localised Prostate Cancer: Population Based Cohort Study," *BMJ* 339, no. nov27 2 (2009): b4817, <https://doi.org/10.1136/bmj.b4817>.
- [8] O. Alexis and A. J. Worsley, "A Meta-Synthesis of Qualitative Studies Exploring Men's Sense of Masculinity Post-Prostate Cancer Treatment," *Cancer Nursing* 41, no. 4 (2018): 298–310, <https://doi.org/10.1097/NCC.0000000000000509>.
- [9] R. Green, "Experiences and Management of Uncertainty Following Treatment for Prostate Cancer," *Health, Risk & Society* 26, no. 5–6 (2024): 240–259, <https://doi.org/10.1080/13698575.2024.2345631>.
- [10] M. A. Hoyt, A. L. Stanton, M. R. Irwin, and K. S. Thomas, "Cancer-Related Masculine Threat, Emotional Approach Coping, and Physical Functioning Following Treatment for

- Prostate Cancer," *Health Psychology* 32, no. 1 (2013): 66–74, <https://doi.org/10.1037/a0030020>.
- [11] R. N. Carleton, "Into the Unknown: A Review and Synthesis of Contemporary Models Involving Uncertainty," *Journal of Anxiety Disorders* 39 (2016): 30–43, <https://doi.org/10.1016/j.janxdis.2016.02.007>.
 - [12] A. A. Panjwani, A. J. Applebaum, T. A. Revenson, J. Erblisch, and B. Rosenfeld, "Intolerance of Uncertainty, Experiential Avoidance, and Trust in Physician: A Moderated Mediation Analysis of Emotional Distress in Advanced Cancer," *Journal of Behavioral Medicine* 47, no. 1 (2024): 71–81, <https://doi.org/10.1007/s10865-023-00419-5>.
 - [13] T. Guan, S. J. Santacroce, D.-G. Chen, and L. Song, "Illness Uncertainty, Coping, and Quality of Life Among Patients With Prostate Cancer," *Psycho-Oncology* 29, no. 6 (2020): 1019–1025, <https://doi.org/10.1002/pon.5372>.
 - [14] D. M. Langelier, C. Jackson, W. Bridel, C. Grant, and S. N. Culos-Reed, "Coping Strategies in Active and Inactive Men With Prostate Cancer: A Qualitative Study," *Journal of Cancer Survivorship* 16, no. 2 (2022): 421–431, <https://doi.org/10.1007/s11764-021-01037-3>.
 - [15] S. C. Hayes, J. B. Luoma, F. W. Bond, A. Masuda, and J. Lillis, "Acceptance and Commitment Therapy: Model, Processes and Outcomes," *Behaviour Research and Therapy* 44, no. 1 (2006): 1–25, <https://doi.org/10.1016/j.brat.2005.06.006>.
 - [16] S. C. Hayes, M. Villatte, M. Levin, and M. Hildebrandt, "Open, Aware, and Active: Contextual Approaches as an Emerging Trend in the Behavioral and Cognitive Therapies," *Annual Review of Clinical Psychology* 7, no. 1 (2011): 141–168, <https://doi.org/10.1146/annurev-clinpsy-032210-104449>.
 - [17] S. C. Hayes, K. D. Strosahl, and K. G. Wilson, in *Acceptance and Commitment Therapy: the Process and Practice of Mindful Change*, 2nd ed. (Guilford Press, 2012).
 - [18] C. Cheng, H. P. B. Lau, and M. P. S. Chan, "Coping Flexibility and Psychological Adjustment to Stressful Life Changes: A Meta-Analytic Review," *Psychological Bulletin* 140, no. 6 (2014): 1582–1607, <https://doi.org/10.1037/A0037913>.
 - [19] S. Fawson, Z. Moon, K. Novogrudsky, et al., "Acceptance and Commitment Therapy Processes and Their Association With Distress in Cancer: A Systematic Review and Meta-Analysis," *Health Psychology Review* 18, no. 3 (2024): 456–477, <https://doi.org/10.1080/17437199.2023.2261518>.
 - [20] T. B. Kashdan and J. Rottenberg, "Psychological Flexibility as a Fundamental Aspect of Health," *Clinical Psychology Review* 30, no. 7 (2010): 865–878, <https://doi.org/10.1016/j.cpr.2010.03.001>.
 - [21] G. McAteer and D. Gillanders, "Investigating the Role of Psychological Flexibility, Masculine Self-Esteem and Stoicism as Predictors of Psychological Distress and Quality of Life in Men Living With Prostate Cancer," *European Journal of Cancer Care* 28, no. 4 (2019): e13097, <https://doi.org/10.1111/ecc.13097>.
 - [22] L. J. Sevier-Guy, N. Ferreira, C. Somerville, and D. Gillanders, "Psychological Flexibility and Fear of Recurrence in Prostate Cancer," *European Journal of Cancer Care* 30, no. 6 (2021): e13483, <https://doi.org/10.1111/ECC.13483>.
 - [23] J. Bowie, O. Brunckhorst, R. Stewart, P. Dasgupta, and K. Ahmed, "Body Image, Self-Esteem, and Sense of Masculinity in Patients With Prostate Cancer: A Qualitative Meta-Synthesis," *Journal of Cancer Survivorship* 16, no. 1 (2021): 95–110, <https://doi.org/10.1007/s11764-021-01007-9>.
 - [24] R. Buote, E. Cameron, R. Collins, and E. McGowan, "Understanding Men's Experiences With Prostate Cancer Stigma: A Qualitative Study," *Oncology Nursing Forum* 47, no. 5 (2020): 577–585, <https://doi.org/10.1188/20.onf.577-585>.
 - [25] R. W. Connell and J. W. Messerschmidt, "Hegemonic Masculinity: Rethinking the Concept," *Gender & Society* 19, no. 6 (2005): 829–859, <https://doi.org/10.1177/0891243205278639>.
 - [26] J. R. Mahalik, B. D. Locke, L. H. Ludlow, et al., "Development of the Conformity to Masculine Norms Inventory," *Psychology of Men and Masculinity* 4, no. 1 (2003): 3–25, <https://doi.org/10.1037/1524-9220.4.1.3>.
 - [27] D. Corboy, J. Meier, and S. McLaren, "Self-Reliance and Stoicism as Predictors of Distress Following Radical Prostatectomy in the Context of Place of Residence," *Psychology of Men & Masculinities* 20, no. 4 (2019): 637–646, <https://doi.org/10.1037/men0000197>.
 - [28] Y. J. Wong, M.-H. R. Ho, S.-Y. Wang, and I. S. K. Miller, "Meta-Analyses of the Relationship Between Conformity to Masculine Norms and Mental Health-Related Outcomes," *Journal of Counseling Psychology* 64, no. 1 (2017): 80–93, <https://doi.org/10.1037/cou0000176>.
 - [29] S. M. Burns and J. R. Mahalik, "Sexual Functioning as a Moderator of the Relationship Between Masculinity and Men's Adjustment Following Treatment for Prostate Cancer," *American Journal of Men's Health* 2, no. 1 (2008): 6–16, <https://doi.org/10.1177/1557988307304325>.
 - [30] M. E. Galbraith, J. M. Ramirez, and L. W. Pedro, "Quality of Life, Health Outcomes, and Identity for Patients With Prostate Cancer in Five Different Treatment Groups," *Oncology Nursing Forum* 28, no. 3 (2001): 551–560.
 - [31] D. K. Iwamoto and A. P. Smiler, "Alcohol Makes You Macho and Helps You Make Friends: The Role of Masculine Norms and Peer Pressure in Adolescent Boys' and Girls' Alcohol Use," *Substance Use & Misuse* 48, no. 5 (2013): 371–378, <https://doi.org/10.3109/10826084.2013.765479>.
 - [32] J. R. Mahalik, S. M. Burns, and M. Syzdek, "Masculinity and Perceived Normative Health Behaviors as Predictors of Men's Health Behaviors," *Social Science & Medicine* 64, no. 11 (2007): 2201–2209, <https://doi.org/10.1016/j.socscimed.2007.02.035>.
 - [33] G. Aharon, D. Aisenberg-Shafran, and Y. Levi-Belz, "Adherence to Masculinity Norms and Depression Symptoms Among Israeli Men: The Moderating Role of Psychological Flexibility," *American Journal of Men's Health* 18, no. 3 (2024): 15579883241253820, <https://doi.org/10.1177/15579883241253820>.
 - [34] J. A. Clark, B. G. Bokhour, T. S. Inui, R. A. Silliman, and J. A. Talcott, "Measuring Patients' Perceptions of the Outcomes of Treatment for Early Prostate Cancer," *Medical Care* 41, no. 8 (2003): 923–936, <https://doi.org/10.1097/00005650-200308000-00006>.
 - [35] D. Allensworth-Davies, J. A. Talcott, T. Heeren, B. de Vries, T. O. Blank, and J. A. Clark, "The Health Effects of Masculine Self-Esteem Following Treatment for Localized Prostate Cancer Among Gay Men," *LGBT Health* 3, no. 1 (2016): 49–56, <https://doi.org/10.1089/LGBT.2015.0090>.
 - [36] S. K. Chambers, L. Schover, L. Nielsen, et al., "Couple Distress After Localised Prostate Cancer," *Supportive Care in Cancer* 21, no. 11 (2013): 2967–2976, <https://doi.org/10.1007/s00520-013-1868-6>.
 - [37] D. M. Langelier, P. Cormie, W. Bridel, et al., "Perceptions of Masculinity and Body Image in Men With Prostate Cancer: The Role of Exercise," *Supportive Care in Cancer* 26, no. 10

- (2018): 3379–3388, <https://doi.org/10.1007/s00520-018-4178-1>.
- [38] R. J. Rebello, C. Oing, K. E. Knudsen, et al., “Prostate Cancer,” *Nature Reviews Disease Primers* 7, no. 1 (2021): 9, <https://doi.org/10.1038/s41572-020-00243-0>.
 - [39] A. J. Roth, M. I. Weinberger, and C. J. Nelson, “Prostate Cancer: Psychosocial Implications and Management,” *Future Oncology* 4, no. 4 (2008): 561–568, <https://doi.org/10.2217/14796694.4.4.561>.
 - [40] J. J. Tosoian, H. B. Carter, A. Lepor, and S. Loeb, “Active Surveillance for Prostate Cancer: Current Evidence and Contemporary State of Practice,” in *Nature Reviews Urology*, 13, no. 4 (Nature Publishing Group, 2016), 205–215, <https://doi.org/10.1038/nrurol.2016.45>.
 - [41] A. S. Ahadzadeh and S. P. Sharif, “Uncertainty and Quality of Life in Women With Breast Cancer: Moderating Role of Coping Styles,” *Cancer Nursing* 41, no. 6 (2018): 484–490, <https://doi.org/10.1097/NCC.0000000000000552>.
 - [42] T. A. Skojec, T. M. Davidson, and T. J. Kelechi, “The Relationship Between Uncertainty in Illness and Psychological Adjustment to Chronic Illness,” *Journal of Health Psychology* (2024): <https://doi.org/10.1177/13591053241249861>.
 - [43] Y. Li, D. Gillanders, and A. Finucane, “Experience of Uncertainty in Prostate Cancer: A Qualitative Study,” *PLoS One* 20, no. 10 (2025): e0334180, <https://doi.org/10.1371/journal.pone.0334180>.
 - [44] J. F. Boswell, J. Thompson-Hollands, T. J. Farchione, and D. H. Barlow, “Intolerance of Uncertainty: A Common Factor in the Treatment of Emotional Disorders,” *Journal of Clinical Psychology* 69, no. 6 (2013): 630–645, <https://doi.org/10.1002/JCLP.21965>.
 - [45] K. Kurita, E. B. Garon, A. L. Stanton, and B. E. Meyerowitz, “Uncertainty and Psychological Adjustment in Patients With Lung Cancer,” *Psycho-Oncology* 22, no. 6 (2013): 1396–1401, <https://doi.org/10.1002/PON.3155>.
 - [46] Z. Shen, L. Zhang, S. Shi, C. Ruan, L. Dan, and C. Li, “The Relationship Between Uncertainty and Fear of Disease Progression Among Newly Diagnosed Cancer Patients: The Mediating Role of Intolerance of Uncertainty,” *BMC Psychiatry* 24, no. 1 (2024): 756, <https://doi.org/10.1186/s12888-024-06201-4>.
 - [47] S. Taha, K. Matheson, T. Cronin, and H. Anisman, “Intolerance of Uncertainty, Appraisals, Coping, and Anxiety: The Case of the 2009 H1N1 Pandemic,” *British Journal of Health Psychology* 19, no. 3 (2014): 592–605, <https://doi.org/10.1111/BJHP.12058>.
 - [48] S. A. Eisenberg, K. Kurita, M. Taylor-Ford, D. B. Agus, M. E. Gross, and B. E. Meyerowitz, “Intolerance of Uncertainty, Cognitive Complaints, and Cancer-Related Distress in Prostate Cancer Survivors,” *Psycho-Oncology* 24, no. 2 (2015): 228–235, <https://doi.org/10.1002/pon.3590>.
 - [49] H.-J. Tan, L. S. Marks, M. A. Hoyt, et al., “The Relationship Between Intolerance of Uncertainty and Anxiety in Men on Active Surveillance for Prostate Cancer,” *The Journal of Urology* 195, no. 6 (2016): 1724–1730, <https://doi.org/10.1016/j.juro.2016.01.108>.
 - [50] C. S. Carver, “You Want to Measure Coping but Your Protocol’s Too Long: Consider the Brief Cope,” *International Journal of Behavioral Medicine* 4, no. 1 (1997): 92–100, https://doi.org/10.1207/s15327558ijbm0401_6.
 - [51] S. A. Eisenberg, B. J. Shen, E. R. Schwarz, and S. Mallon, “Avoidant Coping Moderates the Association Between Anxiety and Patient-Rated Physical Functioning in Heart Failure Patients,” *Journal of Behavioral Medicine* 35, no. 3 (2012): 253–261, <https://doi.org/10.1007/s10865-011-9358-0>.
 - [52] D. L. Dawson and N. Golijani-Moghaddam, “COVID-19: Psychological Flexibility, Coping, Mental Health, and Wellbeing in the UK During the Pandemic,” *Journal of Contextual Behavioral Science* 17 (2020): 126–134, <https://doi.org/10.1016/j.jcbs.2020.07.010>.
 - [53] D. T. Gillanders, A. K. Sinclair, M. MacLean, and K. Jardine, “Illness Cognitions, Cognitive Fusion, Avoidance and Self-Compassion as Predictors of Distress and Quality of Life in a Heterogeneous Sample of Adults, After Cancer,” *Journal of Contextual Behavioral Science* 4, no. 4 (2015): 300–311, <https://doi.org/10.1016/J.JCBS.2015.07.003>.
 - [54] N. Morris, N. Moghaddam, A. Tickle, and S. Biswas, “The Relationship Between Coping Style and Psychological Distress in People With Head and Neck Cancer: A Systematic Review,” *Psycho-Oncology* 27, no. 3 (2018): 734–747, <https://doi.org/10.1002/PON.4509>.
 - [55] V. S. Helgeson and Cohen, “Social Support and Adjustment to Cancer: Reconciling Descriptive, Correlational, and Intervention Research,” *Cancer Patients and Their Families: Readings on Disease Course, Coping, and Psychological Interventions* (2004): 53–79, <https://doi.org/10.1037/10338-003>.
 - [56] T. S. Kershaw, D. W. Mood, G. Newth, et al., “Longitudinal Analysis of a Model to Predict Quality of Life in Prostate Cancer Patients and Their Spouses,” *Annals of Behavioral Medicine* 36, no. 2 (2008): 117–128, <https://doi.org/10.1007/s12160-008-9058-3>.
 - [57] K. Darabos and M. A. Hoyt, “Masculine Norms About Emotionality and Social Constraints in Young and Older Adult Men With Cancer,” *Journal of Behavioral Medicine* 40, no. 2 (2017): 259–270, <https://doi.org/10.1007/s10865-016-9739-5>.
 - [58] H. Kang, “Sample Size Determination and Power Analysis Using the G*Power Software,” *Journal of Educational Evaluation for Health Professions* 18 (2021): 17, <https://doi.org/10.3352/JEEHP.2021.18.17>.
 - [59] A. M. Schoemann, A. J. Boulton, and S. D. Short, “Determining Power and Sample Size for Simple and Complex Mediation Models,” *Social Psychological and Personality Science* 8, no. 4 (2017): 379–386, <https://doi.org/10.1177/1948550617715068>.
 - [60] S. K. Chambers, M. K. Hyde, J. L. Oliffe, et al., “Measuring Masculinity in the Context of Chronic Disease,” *Psychology of Men and Masculinity* 17, no. 3 (2016): 228–242, <https://doi.org/10.1037/MEN0000018>.
 - [61] R. N. Carleton, M. A. P. J. Norton, and G. J. G. Asmundson, “Fearing the Unknown: A Short Version of the Intolerance of Uncertainty Scale,” *Journal of Anxiety Disorders* 21, no. 1 (2007): 105–117, <https://doi.org/10.1016/J.JANXDIS.2006.03.014>.
 - [62] A. T. Gloster, V. J. Block, J. Klotsche, et al., “Psy-Flex: A Contextually Sensitive Measure of Psychological Flexibility,” *Journal of Contextual Behavioral Science* 22 (2021): 13–23, <https://doi.org/10.1016/j.jcbs.2021.09.001>.
 - [63] J. D. Henry and J. R. Crawford, “The Short-Form Version of the Depression Anxiety Stress Scales (DASS-21): Construct Validity and Normative Data in a Large Non-Clinical Sample,” *British Journal of Clinical Psychology* 44, no. 2 (2005): 227–239, <https://doi.org/10.1348/014466505X29657>.
 - [64] R. Tennant, L. Hiller, R. Fishwick, et al., “The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS): Development and UK Validation,” *Health and Quality of Life Outcomes* 5, no. 1 (2007): 63, <https://doi.org/10.1186/1477-7525-5-63>.

- [65] R Core Team, *R: A Language and Environment for Statistical Computing (4.2.1)* (R Foundation for Statistical Computing, 2021).
- [66] D. A. Bennett, "How Can I Deal with Missing Data in My Study?" *Australian & New Zealand Journal of Public Health* 25, no. 5 (2001): 464–469, <https://doi.org/10.1111/J.1467-842X.2001.TB00294.X>.
- [67] J. Honaker, G. King, and M. Blackwell, "Amelia II: A Program for Missing Data," *Journal of Statistical Software* 45, no. 7 (2011): 1–47, <https://doi.org/10.18637/JSS.V045.I07>.
- [68] J. Cohen, "Statistical Power Analysis for the Behavioral Sciences," *Statistical Power Analysis for the Behavioral Sciences* (2013): <https://doi.org/10.4324/9780203771587>.
- [69] H. Badr and C. L. Carmack Taylor, "Sexual Dysfunction and Spousal Communication in Couples Coping With Prostate Cancer," *Psycho-Oncology* 18, no. 7 (2009): 735–746, <https://doi.org/10.1002/pon.1449>.
- [70] E. Chung, "Male Sexual Dysfunction and Rehabilitation Strategies in the Settings of Salvage Prostate Cancer Treatment," *International Journal of Impotence Research* 33, no. 4 (2021): 457–463, <https://doi.org/10.1038/s41443-021-00437-4>.
- [71] A.-M. Talvitie, H. Ojala, T. Tammela, and I. Pietilä, "Prostate Cancer-Related Sexual Dysfunction—The Significance of Social Relations in Men's Reconstructions of Masculinity," *Culture, Health and Sexuality* 26, no. 6 (2024): 763–777, <https://doi.org/10.1080/13691058.2023.2250410>.
- [72] A. F. Hayes, *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach* (Guilford publications, 2017).
- [73] S. Occhipinti, K. Laurie, M. K. Hyde, et al., "Measuring Masculinity in Men With Chronic Disease," *American Journal of Men's Health* 13, no. 4 (2019): 1557988319859706, <https://doi.org/10.1177/1557988319859706>.
- [74] K. K. Sarasjärvi, M. Elovainio, K. Appelqvist-Schmidlechner, P. Solin, N. Tamminen, and S. Therman, "Exploring the Structure and Psychometric Properties of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) in a Representative Adult Population Sample," *Psychiatry Research* 328 (2023): 115465, <https://doi.org/10.1016/J.PSYCHRES.2023.115465>.
- [75] D. M. Langelier, A. D'Silva, J. Shank, C. Grant, W. Bridel, and S. N. Culos-Reed, "Exercise Interventions and Their Effect on Masculinity, Body Image, and Personal Identity in Prostate Cancer—A Systematic Qualitative Review," *Psycho-Oncology* 28, no. 6 (2019): 1184–1196, <https://doi.org/10.1002/pon.5060>.
- [76] S. Kim and S. Yu, "Men's Mental Health and Interventions Tailored to Masculinity: A Scoping Review," *Journal of Men's Health* 19, no. 11 (2023): 1–10, <https://doi.org/10.22514/jomh.2023.111>.
- [77] K. D. Fergus, R. E. Gray, and M. I. Fitch, "Sexual Dysfunction and the Preservation of Manhood: Experiences of Men With Prostate Cancer," *Journal of Health Psychology* 7, no. 3 (2002): 303–316, <https://doi.org/10.1177/1359105302007003223>.
- [78] R. Messaoudi, J. Menard, T. Ripert, H. Parquet, and F. Staerman, "Erectile Dysfunction and Sexual Health After Radical Prostatectomy: Impact of Sexual Motivation," *International Journal of Impotence Research* 23, no. 2 (2011): 81–86, <https://doi.org/10.1038/ijir.2011.8>.
- [79] R. F. Levant and K. Richmond, "The Gender Role Strain Paradigm and Masculinity Ideologies," in *APA Handbook of Men and Masculinities* (American Psychological Association, 2015), 23–49, <https://doi.org/10.1037/14594-002>.
- [80] J. R. Mahalik, W. T. Talmadge, B. D. Locke, and R. P. J. Scott, "Using the Conformity to Masculine Norms Inventory to Work With Men in a Clinical Setting," *Journal of Clinical Psychology* 61, no. 6 (2005): 661–674, <https://doi.org/10.1002/jclp.20101>.
- [81] R. O'Brien, K. Hunt, and G. Hart, "It's Caveman Stuff, But That Is to a Certain Extent How Guys Still Operate: Men's Accounts of Masculinity and Help Seeking," *Social Science & Medicine* 61, no. 3 (2005): 503–516, <https://doi.org/10.1016/j.socscimed.2004.12.008>.
- [82] C. Gentili, S. McClean, L. McGeagh, A. Bahl, R. Persad, and D. Harcourt, "The Impact of Hegemonic Masculine Ideals on Self-Esteem in Prostate Cancer Patients Undergoing Androgen Deprivation Therapy (ADT) Compared to Adt-Naïve Patients," *Psycho-Oncology* 31, no. 11 (2022): 1958–1971, <https://doi.org/10.1002/PON.6001>.
- [83] J. H. Pleck, "The Gender Role Strain Paradigm: An Update" (1995).
- [84] S. M. Burns and J. R. Mahalik, "Physical Health, Self-Reliance, and Emotional Control as Moderators of the Relationship Between Locus of Control and Mental Health Among Men Treated for Prostate Cancer," *Journal of Behavioral Medicine* 29, no. 6 (2006): 561–572, <https://doi.org/10.1007/s10865-006-9076-1>.
- [85] L. C. Campbell, F. J. Keefe, D. C. McKee, S. J. Waters, and J. W. Moul, "Masculinity Beliefs Predict Psychosocial Functioning in African American Prostate Cancer Survivors," *American Journal of Men's Health* 6, no. 5 (2012): 400–408, <https://doi.org/10.1177/1557988312450185>.
- [86] S. K. Chambers, E. Chung, G. Wittert, and M. K. Hyde, "Erectile Dysfunction, Masculinity, and Psychosocial Outcomes: A Review of the Experiences of Men After Prostate Cancer Treatment," *Translational Andrology and Urology* 6, no. 1 (2017): 60–68, <https://doi.org/10.21037/tau.2016.08.12>.
- [87] J. T. Blackledge and S. C. Hayes, "Emotion Regulation in Acceptance and Commitment Therapy," *Journal of Clinical Psychology* 57, no. 2 (2001): 243–255, [https://doi.org/10.1002/1097-4679\(200102\)57:2%3c;243::AID-JCLP9%3e;3.0.CO;2-X](https://doi.org/10.1002/1097-4679(200102)57:2%3c;243::AID-JCLP9%3e;3.0.CO;2-X).
- [88] J. Bomyea, H. Ramsawh, T. M. Ball, et al., "Intolerance of Uncertainty as a Mediator of Reductions in Worry in a Cognitive Behavioral Treatment Program for Generalized Anxiety Disorder," *Journal of Anxiety Disorders* 33 (2015): 90–94, <https://doi.org/10.1016/j.janxdis.2015.05.004>.
- [89] M. K. Kim, K. S. Lee, B. Kim, T. K. Choi, and S.-H. Lee, "Impact of Mindfulness-Based Cognitive Therapy on Intolerance of Uncertainty in Patients With Panic Disorder," *Psychiatry Investigation* 13, no. 2 (2016): 196, <https://doi.org/10.4306/pi.2016.13.2.196>.
- [90] I. R. Molton, E. Koelmel, M. Curran, G. Von Geldern, A. Ordway, and K. N. Alschuler, "Pilot Intervention to Promote Tolerance for Uncertainty in Early Multiple Sclerosis," *Rehabilitation Psychology* 64, no. 3 (2019): 339–350, <https://doi.org/10.1037/rep0000275>.
- [91] S. G. Hofmann, A. Asnaani, I. J. J. Vonk, A. T. Sawyer, and A. Fang, "The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-Analyses," *Cognitive Therapy and Research* 36, no. 5 (2012): 427–440, <https://doi.org/10.1007/s10608-012-9476-1>.
- [92] C. D. Graham, J. Gouick, C. Krahé, and D. Gillanders, "A Systematic Review of the Use of Acceptance and Commitment Therapy (ACT) in Chronic Disease and Long-Term

- Conditions,” *Clinical Psychology Review* 46 (2016): 46–58, <https://doi.org/10.1016/j.cpr.2016.04.009>.
- [93] N. J. Hulbert-Williams, L. Storey, and K. G. Wilson, “Psychological Interventions for Patients With Cancer: Psychological Flexibility and the Potential Utility of Acceptance and Commitment Therapy,” *European Journal of Cancer Care* 24, no. 1 (2015): 15–27, <https://doi.org/10.1111/ECC.12223>.
- [94] P. Fang, L. Tan, J. Cui, and L. Yu, “Effectiveness of Acceptance and Commitment Therapy for People With Advanced Cancer: A Systematic Review and Meta-Analysis of Randomized Controlled Trials,” *Journal of Advanced Nursing* 79, no. 2 (2023): 519–538, <https://doi.org/10.1111/jan.15543>.
- [95] T. Gibson Watt, D. Gillanders, J. A. Spiller, and A. M. Finucane, “Acceptance and Commitment Therapy (ACT) for People With Advanced Progressive Illness, Their Caregivers and Staff Involved in Their Care: A Scoping Review,” *Palliative Medicine* 37, no. 8 (2023): 1100–1128, <https://doi.org/10.1177/02692163231183101>.
- [96] A. T. Gloster, N. Walder, M. E. Levin, M. P. Twohig, and M. Karekla, “The Empirical Status of Acceptance and Commitment Therapy: A Review of Meta-Analyses,” *Journal of Contextual Behavioral Science* 18 (2020): 181–192, <https://doi.org/10.1016/J.JCBS.2020.09.009>.
- [97] X. Jiang, J. Sun, R. Song, Y. Wang, J. Li, and R. Shi, “Acceptance and Commitment Therapy Reduces Psychological Distress in Patients With Cancer: A Systematic Review and Meta-Analysis of Randomized Controlled Trials,” *Frontiers in Psychology* 14 (2024): 1253266, <https://doi.org/10.3389/fpsyg.2023.1253266>.
- [98] B. Maunick, D. Skvarc, L. Olive, and A. Mikocka-Walus, “Effects of Acceptance and Commitment Therapy on Fatigue for Patients With Cancer and Other Chronic Health Conditions: A Systematic Review and Meta-Analysis,” *Journal of Psychosomatic Research* 171 (2023): 111366, <https://doi.org/10.1016/j.jpsychores.2023.111366>.
- [99] Y. Zhang, Y. Ding, X. Chen, Y. Li, J. Li, and X. Hu, “Effectiveness of Acceptance and Commitment Therapy on Psychological Flexibility, Fatigue, Sleep Disturbance, and Quality of Life of Patients with Cancer: A Meta-Analysis of Randomized Controlled Trials,” *Worldviews on Evidence-Based Nursing* 20, no. 6 (2023): 582–592, <https://doi.org/10.1111/wvn.12652>.
- [100] C. Zhao, L. Lai, L. Zhang, et al., “The Effects of Acceptance and Commitment Therapy on the Psychological and Physical Outcomes Among Cancer Patients: A Meta-Analysis With Trial Sequential Analysis,” *Journal of Psychosomatic Research* 140 (2021): 110304, <https://doi.org/10.1016/j.jpsychores.2020.110304>.