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Life Orientation and Advanced Care Planning Engagement among Surrogate Decision-Makers of Patients with Advanced Cancer: A Serial Mediation Analysis

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Abstract

The objective of this investigation was to determine whether surrogate decision-makers' (SDMs) life orientation predicts their level of involvement in advance care planning (ACP). Furthermore, we examined whether this relationship is sequentially mediated by perceived social support and illness-related uncertainty regarding the patient's condition. A cross-sectional survey was administered to a sample of 276 adult SDMs, including patients with advanced-stage cancer, at a medical center in China. Data collection used validated Chinese-language instruments to evaluate life orientation, social support, illness uncertainty, and ACP involvement. A serial mediation framework was employed to assess whether the life orientation of SDMs exerts an indirect effect on ACP involvement via sequential impacts on social support and illness uncertainty, adjusting for pertinent covariates. Analytical procedures, including descriptive statistics, correlation analyses, and structural equation modeling, were conducted using SPSS version 26.0. The findings indicated that highly optimistic SDMs experienced stronger social support networks and lower degrees of illness uncertainty. Mediation modeling confirmed that a more positive life orientation correlated with increased ACP involvement through both direct and indirect pathways: optimism was linked to enhanced perceived social support and minimized illness uncertainty, variables which subsequently correlated with elevated ACP involvement. The comprehensive model accounted for 57.8% of the total variance in ACP involvement. In line with our cross-sectional approach, optimism among SDMs was associated with more proactive involvement in ACP, a relationship partially explained by heightened perceived social support and reduced illness-related uncertainty. Therapeutic strategies aimed at fostering a positive mindset, strengthening social support systems, and clarifying medical information could potentially improve ACP adoption rates. These observations highlight the critical need to translate optimistic psychological dispositions into structured care-planning actions.

Keywords: Life orientation, ACP engagement, Social support, Uncertainty of disease, Surrogate decision-maker

Introduction

Malignant neoplasms present a major public health crisis in China, which currently experiences upwards of 2.2 million incident cases and roughly 1.6 million attributable fatalities annually, establishing cancer as the primary cause of mortality nationwide [1]. A significant proportion of these individuals receive diagnoses at an advanced stage due to limited early screening infrastructure. Recent epidemiological data across the nation indicate that over half (52.8%) of Chinese cancer patients are diagnosed with late-stage (stages III–IV) malignancies [2]. This high frequency of advanced-stage diagnoses dictates that a vast number of patients ultimately progress to a terminal state, emphasizing the critical requirement for structured end-of-life choices and care optimization.

Patients facing terminal cancer frequently confront intricate clinical dilemmas regarding life-prolonging interventions, symptom alleviation protocols, and end-of-life care desires [3]. Nonetheless, these individuals are

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commonly rendered incapable of autonomous decision-making during the final phases of their disease due to diminished consciousness, debilitating symptoms, or cognitive degradation [4]. Under these circumstances, accountability transitions to SDMs—who are predominantly family relatives—tasked with deciding on medical management on behalf of the patient [4]. This structural dynamic is particularly prominent in the Chinese sociocultural environment, where a family-centric paradigm of medical choice rooted in Confucian ethics has traditionally been dominant [5]. Within mainland China, a formal statutory framework governing advance directives is currently absent, and systematic ACP implementation remains uncommon [5]. As a result, critical clinical decisions are routinely thrust upon SDMs without the benefit of prior ACP dialogues or binding legal documentation. Encouraging these SDMs to participate in ACP is therefore essential to ensure alignment with patient preferences and to mitigate acute decisional conflicts.

SDMs managing terminal patients endure profound psychological, emotional, and informational stressors throughout the decision-making trajectory [6]. These surrogates regularly experience severe stress, anxiety, and emotional burden when burdened with life-and-death choices for a relative [6]. They commonly grapple with ambiguities regarding the patient's prognosis and specific end-of-life preferences, which can precipitate decisional conflict and subsequent guilt [7]. Empirical evidence indicates that surrogate determinations are frequently made with insufficient understanding of the patient's actual desires; a systematic review found that SDMs accurately anticipate patient treatment choices in only approximately 68% of cases [4]. This lack of clarity, compounded by the surrogate's personal emotional investment in the clinical outcome, can culminate in acute decision-making distress [8]. Such difficulties underscore the need to support SDMs through optimized communication channels, structured education, and targeted emotional guidance within the ACP continuum.

Inherent psychological traits and social-contextual factors can modulate how SDMs navigate these difficulties [9]. A primary variable of interest is life orientation, generally operationalized as an individual's deep-seated tendency toward optimism or pessimism regarding future events. An optimistic life orientation has been associated with enhanced psychological adaptation and more effective navigation of medical choices [10]. Optimistic individuals frequently harbor more constructive expectations, which may prompt them to be more energetic in gathering information or entering into challenging care-planning dialogues [11]. Furthermore, optimism correlates with greater psychological resilience and may foster the use of active coping mechanisms, potentially helping SDMs mitigate the stress associated with end-of-life choices [12].

Social-contextual resources, particularly social support systems, represent another essential component. Social support—delivered through emotional validation, informational counseling, and practical aid from family structures, peer groups, or clinical staff—can serve as a buffer against stress and bolster decision-making efficacy among SDMs [13]. Robust supportive networks can provide SDMs with direction, knowledge, and reassurance, thereby reducing the ambiguity associated with the patient's medical status and management pathways [14]. Concurrently, empirical literature suggests that elevated perceived social support is significantly associated with reduced illness-related ambiguity among patients and their kinship networks [15].

Disease uncertainty is characterized by patients' or their caregivers' inability to understand or predict probable outcomes, prognosis, or the broader significance of the disease course [16]. Marked uncertainty frequently generates anxiety and can stall ACP communication, as SDMs who lack clarity about clinical expectations or patient preferences may postpone or avoid establishing concrete strategies [17]. Optimizing social support frameworks and clinical communication can help SDMs decode medical data and subtle patient cues, thereby reducing illness-related ambiguity [15].

Our investigative team has previously explored the variables that modulate ACP involvement among the SDMs of advanced cancer patients within China. In a recent cross-sectional analysis, we identified several predictors of surrogate ACP participation, including logistical variables such as prior experience with medical decision-making, educational attainment, baseline knowledge of ACP, and clinical treatment expenditures, as well as essential psychosocial factors such as illness uncertainty, social support networks, and life orientation [18]. Within that investigation, SDMs with higher life orientation scores demonstrated greater social support and increased ACP involvement; enhanced social support was associated with reduced illness uncertainty; and elevated uncertainty was linked to lower ACP participation [18]. Furthermore, Andersen's Behavioral Model of Health Services Use stipulates that health-seeking behavior is dictated by a combination of predisposing, enabling, and need components [19]. Utilizing this theoretical architecture, we frame life orientation as an intrinsic predisposing trait, social support as an enabling resource that concurrently diminishes illness uncertainty (representing an unmet informational need), and ACP involvement as an instance of health service utilization [19]. These interrelations point to an underlying pathway in which an individual's life orientation shapes their ACP involvement by modifying their level of social support and illness-related uncertainty. Grounded in this rationale, the present investigation introduces and evaluates a chain mediation framework wherein social support and illness uncertainty sequentially mediate the connection between life orientation and ACP involvement among the SDMs of terminal cancer patients.

In summary, this investigation posits the following specific research hypotheses:

1. Hypothesis 1 (H1): Life orientation positively predicts engagement in advance care planning among SDMs of terminal cancer patients.
2. Hypothesis 2a (H2a): A more positive life orientation enhances perceived social support, which subsequently increases ACP engagement.
3. Hypothesis 2b (H2b): A more positive life orientation reduces uncertainty of disease, thereby increasing ACP engagement.
4. Hypothesis 2c (H2c): Life orientation improves social support, which subsequently reduces uncertainty of disease, ultimately promoting ACP engagement.

Grounded upon these four conceptual propositions, this investigation establishes a theoretical hypothetical model, as illustrated in **Figure 1.**

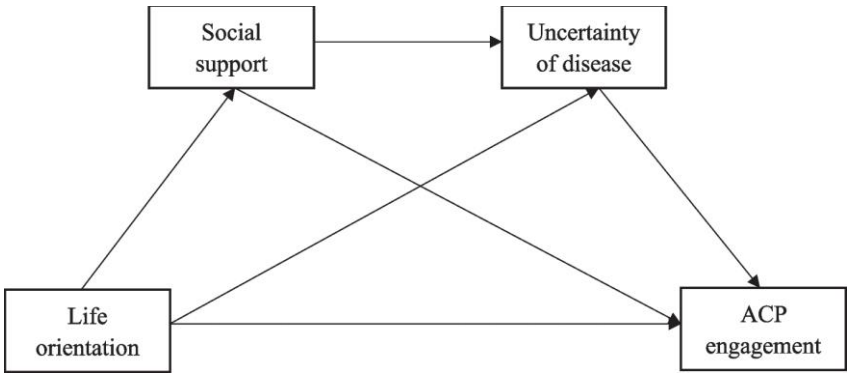

Figure 1. Theoretical model

Materials and Methods

Participants

Data for this cross-sectional exploration were collected at the First Affiliated Hospital of Zhejiang Chinese Medical University, with data collection and structuring conducted between February 2023 and February 2024. Throughout this data-gathering period, the institution managed approximately 5,210 oncology inpatients. Within the specific enrollment areas (consisting of the medical oncology, hematology, and palliative care units), approximately 2,170 admissions involved individuals with advanced-stage malignancies. In these specific wards, the research team reached out to roughly 750 SDMs. To prevent duplicate counting, these metrics represent inpatient hospital admissions and omit outpatient clinic statistics. A total of 285 SDMs representing advanced cancer patients were enrolled through convenience sampling. Following the removal of survey instruments containing missing or non-viable data, 276 complete forms were retained for subsequent statistical processing. Eligible candidates comprised adults (aged \ge 18 years) who maintained an immediate marital or parental tie with an advanced cancer patient and had been formally designated by that patient to act as their proxy representative. Every subject provided written informed consent before enrollment, and the Ethics Committee of Zhejiang Chinese Medical University approved the protocol (Approval No. 20230216–5).

Measurement tools

Socio-demographic and cancer characteristics scale

This instrument was constructed directly by the investigative team. We selected 12 distinct variables for inclusion in the questionnaire: age, biological sex, educational background, marital status, the household size of the SDM, annual household income, relationship category to the advanced cancer patient, the specific classification of the patient's malignancy, cumulative treatment expenditures, the patient's level of independence in activities of daily living (ADL), historical experience executing medical choices, and baseline knowledge regarding ACP.

life orientation test-Chinese (LOT-C)

The life orientation profiles of the SDMs were evaluated using the LOT-C [20]. The LOT-C is a 6-item, single-dimensional self-report tool, with items scored on a scale from 0 (strongly disagree) to 4 (strongly agree). Cumulative scores range from 0 to 24, with higher values indicating greater dispositional optimism. Items 1, 3, and 6 utilize positive phrasing, whereas the remaining items feature negative phrasing. This tool has been psychometrically validated across multiple Chinese cohorts and is widely used in the psychological literature for tracking life orientation. In the present investigation, Cronbach's alpha for the LOT-C was 0.831.

Social support rating scale (SSRS)

Perceived social support was tracked using the SSRS [21]. The SSRS incorporates 12 items spanning three distinct domains: subjective support, objective support, and support utilization behavior. Items 1, 2, 3, 4, 8, 9, and 10 employ a single-choice layout, where responses 1-4 are coded 1–4 (ordered from the lowest to the highest expression of support). Item 5 contains five separate subitems (A through E), each scored from 1–4, representing "none" to "full support"; the overall score for this item is determined by summing its five subitems. Items 6 and 7 assign a value of 0 for "no source"; if any options under "the following sources" are selected, the score reflects the total number of sources endorsed (ranging from 0 to 9). The aggregate SSRS score is derived by summing all coded items, yielding a range of 12–66, with higher numbers indicating stronger social support systems. This scale is widely used in Chinese research contexts and has been validated for use across diverse cohorts. The Cronbach's alpha for the SSRS in this study was 0.788.

Mishel uncertainty in illness scale-family member form-Chinese (MUIS-FM-C)

Ambiguity surrounding the patient's disease trajectory was quantified using the MUIS-FM-C [22]. The MUIS-FM-C comprises 25 items across four dimensions: ambiguity, lack of clarity, lack of information, and unpredictability. It utilizes a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items 6, 9, 17, 21, 23, 24, and 25 are reverse-scored due to negative wording, while the remaining items are positively phrased. Aggregate scores range from 25 to 125, with higher scores reflecting a greater degree of perceived illness ambiguity. The instrument has been validated across diverse clinical environments, establishing strong reliability and structural validity for measuring uncertainty among family caregivers of oncology patients. In this sample, the Cronbach's \alpha for the MUIS-FM-C was 0.887.

Advance care planning engagement survey for surrogate decision makers-Chinese (ACP-17-SDM-C)

The degree of surrogate involvement in ACP was tracked via the ACP-17-SDM-C [23]. This scale contains 17 items distributed across three specific domains: serving as an SDM, contemplation, and readiness. Items are scored on a 5-point Likert configuration from 1 (not at all/never) to 5 (very much/always). Total scores on the ACP-17-SDM-C range from 17 to 85, where higher cumulative values indicate more active participation in ACP. It is broadly recognized as a robust tool for evaluating surrogate participation in care-planning conversations. The Cronbach's \alpha for the ACP-17-SDM-C was 0.915 within the current study.

Data collection

Trained research assistants contacted prospective subjects in person within the inpatient units (medical oncology, hematology, and palliative care wards) to invite them to participate in the study. Each participant was approached only once to prevent redundant surveying. Following a thorough explanation of the investigation's objective and protocol, written informed consent was obtained from each individual. Subjects subsequently filled out the structured paper questionnaire on site, completing it either independently or with procedural clarification from the researchers when required. All completed survey instruments were reviewed on-site to ensure data integrity, and the metrics were subsequently compiled in SPSS for statistical analysis.

Statistical analysis

Initially, univariate linear regression was used to isolate factors associated with ACP involvement. Explanatory variables demonstrating statistical significance ($P < 0.05$) in these initial univariate assessments were subsequently entered into a multiple linear regression framework to identify independent predictors of ACP involvement.

Next, Pearson correlation coefficients were computed to examine the bivariate associations among life orientation, social support, illness uncertainty, and ACP involvement. A chain mediation analysis was conducted to determine whether life orientation exerted an indirect effect on ACP involvement through the sequential mediators of social support and illness uncertainty. This mediation modeling was carried out using IBM SPSS Statistics version 26.0, integrated with Hayes' PROCESS macro (version 4.0), using Model 6 to test the serial mediation pathway. Within this designated framework, life orientation served as the independent variable (X), and social support and illness-related uncertainty were entered sequentially as the first (M_1) and second (M_2) mediators, respectively, with ACP involvement as the dependent variable (Y). Any remaining variables that retained a statistically significant relationship with ACP involvement in the multivariate model were entered as covariates (control variables) inside the mediation structure. Indirect effects were calculated using a bias-corrected bootstrapping approach featuring 5,000 resamples to derive 95% confidence intervals (CIs). An indirect pathway was deemed statistically meaningful if its corresponding 95% CI excluded zero. All hypothesis tests were two-tailed, with a threshold of $P < 0.05$ for statistical significance.

Results and Discussion

Demographic profiles of the cohort and covariates affecting ACP participation

The sample population consisted of 276 surrogate decision-makers (SDMs) representing individuals diagnosed with advanced-stage malignancies. Age distribution within this cohort leaned heavily toward middle-aged individuals, with 35.5% falling between 18 and 40 years, 40.9% in the 41–60 range, and 23.6% in the ≥ 61 years category. Female participants slightly outnumbered males, accounting for 52.2% of the sample. Educational attainment was distributed across distinct tiers: roughly one-third of the surrogates held at least an undergraduate degree (36.6%), 20.7% had completed secondary education, and the remaining portion had obtained a junior high school education or less. Marital status was heavily skewed toward being married (86.6%), and the vast majority of respondents indicated no formal religious affiliation. In terms of familial relationships, adult children accounted for the largest share of surrogates (44.9%), followed closely by spouses (43.8%). In contrast, parental surrogates (6.9%) and secondary relatives (including siblings or grandchildren at 2.2% each) were rarely observed.

Based on multiple linear regression modeling, the propensity of surrogates to participate in advance care planning (ACP) for individuals facing terminal oncology conditions was significantly shaped by a combination of factors. Alongside the primary psychosocial elements (illness uncertainty, social support, and dispositional outlook), factors including past medical proxy experiences, level of formal education, baseline literacy regarding ACP, and awareness of oncology treatment costs emerged as strong predictors. Specifically, surrogates who possessed previous experience navigating healthcare choices, higher educational credentials, a solid grasp of ACP concepts, and greater awareness of the financial burdens of therapy demonstrated a more pronounced readiness to engage in ACP processes.

Descriptive statistics and bivariate correlations

Table 1 presents the mean values (M ± SD) and Pearson correlation coefficients for the primary study variables. The cohort exhibited a mean life orientation score of 14.13 ± 4.82, which was lower than that recorded in a comparative cervical cancer sample (19.86 ± 3.03) [24]. The average score for perceived social support was 33.58 ± 8.00, marking a deficit when contrasted with proxies for individuals with hematological malignancies (40.33 ± 6.78) [23]. Regarding illness uncertainty, the study average reached 57.21 ± 14.87, which was lower than the baseline reported by general oncology caregivers (66.43 ± 12.54) [23]. Lastly, the mean score for ACP involvement stood at 51.53 ± 12.57, aligning closely with patterns observed among proxies managing hematological malignancies (52.23 ± 13.57) [23].

Table 1. Descriptive statistical results and correlation analysis between variables. From: The impact of life orientation on advanced care planning engagement in surrogate decision-makers of terminal cancer patients: a chain mediation model of social support and uncertainty of disease.

Variable	ACP engagement	Disease uncertainty	Social support	Life orientation	Mean ± SD
Life orientation	—	—	—	1.000	14.13 ± 4.82
Social support	—	—	1.000	0.301***	33.58 ± 8.00
Disease uncertainty	—	1.000	−0.149*	−0.241**	57.21 ± 14.87
Advance care planning (ACP) engagement	1.000	−0.232***	0.159**	0.105*	51.53 ± 12.57

*P < 0.05, **P < 0.01, and ***P < 0.001.

Bivariate analysis via Pearson correlations demonstrated that an optimistic life orientation was positively linked to both social support ($r = 0.301$, $P < 0.001$) and active ACP participation ($r = 0.105$, $P < 0.05$), while maintaining an inverse relationship with the perceived uncertainty of the medical condition ($r = -0.241$, $P < 0.01$). Higher social support was modestly associated with lower uncertainty ($r = -0.149$, $P < 0.05$) and greater ACP participation ($r = 0.159$, $P < 0.01$). Furthermore, a strong inverse relationship was observed between illness uncertainty and planning involvement ($r = -0.232$, $P < 0.001$). Each observed bivariate connection matched the hypothesized paths and reached statistical significance at the 0.05 threshold or higher.

Evaluation of serial mediation pathways

The hypothesized sequential mediation framework was validated by the structural regression outcomes **(Table 2; Figure 2).** Dispositional outlook functioned as a prominent driver for both intermediate variables: a higher life orientation score predicted elevated perceptions of social support ($\beta = 0.301$, $P < 0.001$) alongside reduced levels of illness uncertainty ($\beta = -0.241$, $P < 0.001$). Concurrently, enhanced social support was a predictor of lower disease uncertainty ($\beta = -0.149$, $P = 0.023$). In the fully adjusted multivariate model predicting ACP involvement—incorporating dispositional outlook, both intermediate mediators, and baseline covariates—all three psychological constructs retained independent, significant predictive weight. Specifically, life orientation showed a positive direct effect on ACP participation ($\beta = 0.105$, $P = 0.024$). In contrast, social support was a positive predictor ($\beta = 0.159$, $P = 0.002$), and illness uncertainty was an inverse predictor ($\beta = -0.232$, $P < 0.001$).

The complete model accounted for approximately 57.8% of the overall variance in planning engagement (R^2 = 0.578, F = 52.448, P < 0.001).

Table 2. Regression analysis of variable relationships in chain mediation models. From: The impact of life orientation on advanced care planning engagement in surrogate decision-makers of terminal cancer patients: a chain mediation model of social support and uncertainty of disease.

Outcome Variable	Predictor	p	t	β	F	R^2	R
ACP engagement	Education level	0.000***	6.465	0.275	57.093	0.514	0.717
	Experience with medical decision-making	0.000***	5.442	0.572	—	—	—
	ACP knowledge	0.008**	2.693	0.190	—	—	—
	Treatment expenditure	0.001**	3.244	0.165	—	—	—
	Life orientation	0.000***	4.850	0.219	—	—	—
Social support	Education level	0.000***	4.985	0.245	29.319	0.352	0.593
	Experience with medical decision-making	0.104	1.632	0.198	—	—	—
	ACP knowledge	0.109	1.609	0.131	—	—	—
	Treatment expenditure	0.070	1.820	0.107	—	—	—
	Life orientation	0.000***	5.765	0.301	—	—	—
Disease uncertainty	Education level	0.013*	−2.516	−0.139	15.268	0.254	0.504
	Experience with medical decision-making	0.144	−1.464	−0.192	—	—	—
	ACP knowledge	0.755	−0.313	−0.028	—	—	—
	Treatment expenditure	0.143	−1.470	−0.093	—	—	—
	Social support	0.023*	−2.284	−0.149	—	—	—
	Life orientation	0.000***	−4.058	−0.241	—	—	—
ACP engagement (Final Model)	Education level	0.000***	4.650	0.196	52.448	0.578	0.760
	Experience with medical decision-making	0.000***	4.934	0.489	—	—	—
	ACP knowledge	0.018*	2.387	0.158	—	—	—
	Treatment expenditure	0.011*	2.554	0.123	—	—	—
	Social support	0.002**	3.186	0.159	—	—	—
	Disease uncertainty	0.000***	−5.051	−0.232	—	—	—
	Life orientation	0.024*	2.279	0.105	—	—	—

*P < 0.05, P < 0.01, and ***P < 0.001.

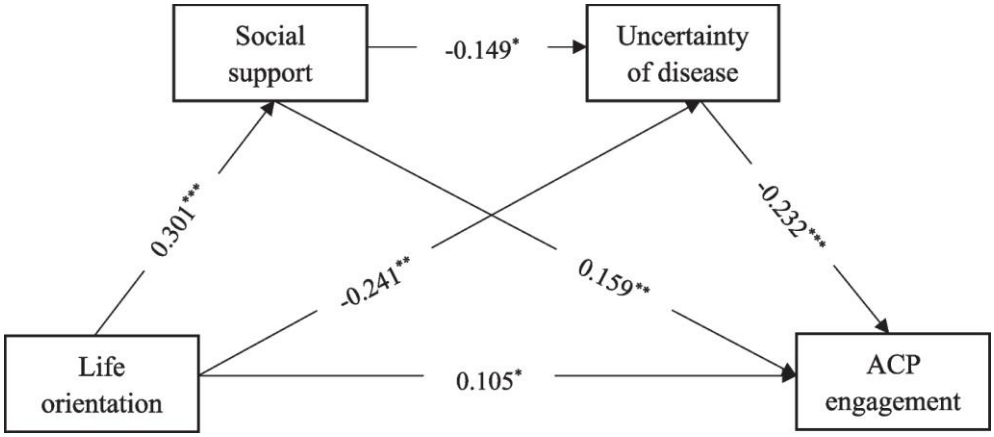

Figure 2. The mediation model. Note: Path values are the path coefficients. All path coefficients were standardized. * P < 0.05, P < 0.01, and *** P < 0.001

Bootstrap mediation testing confirmed that all three indirect pathways were statistically significant **(Table 3).** The singular indirect path connecting life orientation to ACP involvement through social support alone produced an effect size of 0.048 (95% CI: 0.015–0.085). The isolated indirect path operating purely through illness uncertainty yielded an effect of 0.056 (95% CI: 0.025–0.099). The continuous, multi-mediator sequence (life orientation → social support → uncertainty → ACP engagement) revealed a smaller but statistically sound indirect coefficient of 0.010 (95% CI: 0.001–0.022). Combining these distinct avenues yielded a substantial total indirect effect of 0.114 (95% CI: 0.072–0.164), accounting for roughly 52.05% of the total influence that dispositional outlook exerts on planning behaviors. The remaining 47.95% of the variance was accounted for by the direct link between life orientation and planning involvement (β = 0.105).

Table 3. The influence paths and effect sizes of life orientation on ACP engagement. From: The impact of life orientation on advanced care planning engagement in surrogate decision-makers of terminal cancer patients: a chain mediation model of social support and uncertainty of disease.

Effect type	Pathway	Proportion of total effect (%)	Bootstrap 95% CI	Bootstrap SE	Standardized estimate
Direct effect	Life orientation → ACP engagement	47.95	[0.105, 0.196]	0.046	0.105
Indirect effect 1	Life orientation → Social support → ACP engagement	21.92	[0.015, 0.085]	0.018	0.048
Indirect effect 2	Life orientation → Disease uncertainty → ACP engagement	25.57	[0.025, 0.099]	0.019	0.056
Indirect effect 3	Life orientation → Social support → Disease uncertainty → ACP engagement	4.56	[0.001, 0.022]	0.005	0.010
Total indirect effect	Combined mediating effects	52.05	[0.072, 0.164]	0.024	0.114
Total effect	Overall effect of life orientation on ACP engagement	100.00	[0.219, 0.309]	0.045	0.219

In the aggregate, dispositional outlook demonstrated a robust total effect on planning readiness (β = 0.219, 95% CI = [0.219, 0.309], P < 0.001), with every evaluated path coefficient meeting the criteria for statistical significance (P < 0.05).

Within end-of-life oncology environments, surrogates bear heavy responsibilities regarding advance care choices, yet their willingness to engage in these discussions is contingent upon underlying psychosocial dynamics. This inquiry examined a sample of 276 Chinese surrogates to assess a sequential mediation configuration, controlling for baseline disparities in schooling, decision-making backgrounds, ACP literacy, and healthcare costs. Corroborating the primary hypotheses, a hopeful life perspective was associated with increased ACP readiness

through direct pathways and indirect mechanisms rooted in bolstered social networks and reduced illness ambiguity. All direct and mediated relationships were validated, and the final integrated model accounted for 57.8% of the variance in planning participation. These conclusions emphasize the critical role these variables play in care planning behaviors, and the following segments interpret these dynamics, their practical utility, and future investigative goals.

The direct linkage between dispositional outlook and planning readiness

Life orientation, capturing an individual's intrinsic leanings toward optimism or pessimism, is widely recognized to determine how people navigate crises and construct future strategies [25]. Theories from positive psychology and stress adaptation suggest that optimistic individuals frequently leverage approach-based adaptive behaviors and maintain high self-efficacy when facing hardships. In contrast, pessimistic individuals more commonly deploy avoidant mechanisms [26, 27]. The average outlook score across the current sample was 14.13 ± 4.82. The present analyses show a modest but significant direct link between a person's life orientation and surrogates' care planning involvement, with an optimistic outlook serving as a baseline predictor of heightened engagement within the model.

Even so, specific cultural constructs and societal paradigms within China likely shape this dynamic. For instance, the traditional paradigm "life and death are predestined, heaven determines wealth" mirrors a fatalistic philosophy that can disincentivize proactive end-of-life preparation [28]. Nevertheless, empirical studies from Hong Kong indicate that a belief in fate control—where individuals view circumstances as predetermined yet still pliable—correlates with both active and avoidant coping frameworks [29]. In short, even within a fatalistic worldview, optimistic individuals may continue to use active problem-solving strategies.

Another powerful cultural variable involves family-centered decision-making. Chinese communities operate under collectivist ideals, in which family solidarity frequently eclipses individual self-determination [30]. Investigations among Chinese care providers highlight that establishing family consensus is a non-negotiable step when evaluating end-of-life options [31]. In these collectivist environments, optimistic surrogates are better positioned to initiate care conversations and lead familial consensus-building, thereby dismantling cultural resistance. Indeed, past literature has shown that healthy family dynamics work in tandem with a positive outlook to drive planning participation [32].

To summarize, a surrogate's intrinsic life orientation was positively coupled with their readiness to participate in ACP. Given this study's cross-sectional design, the structural trend is interpreted using an Andersen-modeled framework. On a clinical level, these patterns suggest that design models aimed at fostering hope and agency among surrogates could improve planning participation. Furthermore, AI-supported platforms may help boost planning engagement by enabling users to explore personal care values, thereby building their decision-making confidence and baseline knowledge [33]. Finally, these findings indicate that medical professionals should actively address fatalistic assumptions while validating and supporting family-level dialogues. Deciphering this direct connection between an optimistic outlook and care planning provides the groundwork for analyzing how life orientation intersects with broader variables to shape planning behaviors.

The mediating role of social support and uncertainty of disease

Using the framework of the Andersen model, all statistical estimates are interpreted as distinct associations that follow a predisposing-enabling-need sequence, rather than as definitive causal impacts. The serial mediation analysis, which adjusted for essential baseline covariates, demonstrated that life orientation was positively associated with surrogate ACP involvement through both a direct pathway and indirect mechanisms involving elevated social support and reduced illness uncertainty. SDMs characterized by a more optimistic worldview routinely reported more robust social support structures. This heightened support, in turn, was linked to lower levels of illness uncertainty, and both constructs were associated with more active engagement in advance care deliberations. These structural patterns mirror previous literature that identifies life orientation, social support, and illness uncertainty as core correlates of ACP participation [18]. This dynamic aligns with Stress-and-Coping Theory, which suggests that optimistic individuals are more likely to appraise challenging situations as less threatening, allowing them to mobilize adaptive resources (social support), minimize overall stress (illness uncertainty), and utilize problem-focused adaptive strategies (planning) [34, 35].

Social support functioned as the primary intermediate mediator within this framework. Optimistic SDMs are inherently more likely to cultivate stronger relationships with relatives, peers, and healthcare providers, thereby securing greater emotional encouragement and functional advice. Within China's collectivist cultural framework, community and extended family systems are profoundly vital, with cooperative interdependence prioritized over individual autonomy [36]. Consequently, an increased perception of social support empowers SDMs by providing necessary information and validation, smoothing the path for end-of-life dialogues, and reinforcing their personal agency as they navigate complex medical decisions [37]. The current literature corroborates this dynamic: a large-scale Chinese survey found that participants with robust social support networks were significantly more receptive

to ACP initiatives and related clinical programs [38]. Furthermore, meta-analytic data indicate that fortifying social support structures consistently reduces disease-related uncertainty in oncology environments [15].

Illness uncertainty operated as the secondary sequential mediator in this model. Elevated ambiguity regarding a patient's clinical prognosis typically generates severe anxiety and avoidant behaviors, which impede constructive ACP interactions [39]. Conversely, when a surrogate is backed by strong social support, they can more efficiently decipher complex medical data and distribute their emotional burdens, thereby mitigating underlying uncertainty. The indirect relationship identified along the support → lower illness uncertainty pathway demonstrates that the link between optimism and ACP involvement may partially reflect enhanced social networks and decreased ambiguity, without implying direct causality. Naturally, a reverse pathway is also entirely plausible, in which heightened ACP participation lowers illness uncertainty. By taking part in advance care deliberations, SDMs may achieve a clearer understanding of the patient's clinical status and therapeutic options, refine their communication with medical professionals, and gain a stronger sense of control over information, thereby reducing ambiguity and emotional distress caused by the disease. To validate this directional sequence, longitudinal or cross-lagged research designs are required to establish true temporal precedence; alternatively, experimental and quasi-experimental frameworks could be deployed to observe if increasing ACP involvement causes a measurable reduction in uncertainty over time. This line of reasoning is congruent with Mishel's Uncertainty in Illness Theory and its associated adaptive models, which argue that minimizing ambiguity through targeted data, transparent communication, and community backing can reduce psychological strain and encourage proactive problem-solving, such as enrolling in advance care planning [16]. Actively mitigating ambiguity by providing transparent clinical updates and educational guidance may successfully dismantle these participation barriers [40].

In summary, social support and disease-related uncertainty serve as vital operational links connecting an SDM's dispositional outlook with their overall ACP engagement. An optimistic mentality is insufficient on its own; it must be translated into active support-seeking behaviors and a clear understanding of the medical condition to prompt concrete action. This suggests that clinical interventions designed to maximize ACP enrollment must function across multiple tiers. For example, family-centered educational tracks or peer-led support networks can reinforce an SDM's social circle. In contrast, highly structured communication channels and educational tools can directly lower ambiguity regarding a patient's prognosis. Interactive workshops or group counseling sessions that include key family members should be utilized to encourage shared decision-making, expand baseline ACP literacy, and nurture collective coping methods [41]. Additionally, medical practitioners and health authorities can construct frameworks that simultaneously enrich adaptive resources and clarify the realities of end-of-life care, thereby translating a positive outlook into actionable advance care planning. Organizing localized or hospital-affiliated palliative care services and embedding ACP into regional health action initiatives are strongly recommended to translate positive attitudes into tangible care-planning practices [42].

Limitation

This investigation contains a few key limitations that require recognition. First, because of the cross-sectional methodology, the observed findings are framed strictly as statistical associations consistent with an Andersen-derived pathway, and the presence of reverse causality must be acknowledged; determining the true temporal order will require future longitudinal or cross-lagged research. Ongoing longitudinal or interventional trials are necessary to verify the directional stability and long-term continuity of these identified pathways. Second, the use of convenience sampling to recruit SDMs from a single Chinese medical institution may limit the generalizability of these insights to other cultural groups or distinct healthcare infrastructure models. Third, a variety of potential confounding variables, such as the specific staging of the patient's disease and idiosyncratic family communication dynamics, were not tracked, even though these elements could fundamentally influence both illness ambiguity and a surrogate's willingness to engage in ACP.

Conclusion

In this cross-sectional exploration, an optimistic life orientation among SDMs was positively associated with active ACP participation, acting both directly and indirectly through amplified perceptions of social support and reduced illness uncertainty. The definitive integrated model accounted for nearly 58% of the total variance in ACP engagement, highlighting the profound importance of these adaptable psychosocial dynamics. Targeted interventions that cultivate optimism, reinforce community support networks, and provide transparent, disease-specific information show immense promise for expanding participation in advance care planning among Chinese surrogate decision-makers managing terminal malignancies, ultimately driving genuinely patient-focused end-of-life care.

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References

1. Wu Z, Xia F, Lin R. Global burden of cancer and associated risk factors in 204 countries and territories, 1980-2021: a systematic analysis for the GBD 2021. J Hematol Oncol. 2024;17(1):119.
2. Zeng H, Ran X, An L, Zheng R, Zhang S, Ji J, et al. Disparities in stage at diagnosis for five common cancers in China: a multicentre, hospital-based, observational study. Lancet Public Health. 2021;6:e877-87.
3. Yang S, Yan C, Li J, Feng Y, Hu H, Li Y. The death education needs of patients with advanced cancer: a qualitative research. BMC Palliat Care. 2024;23(1):259.
4. Batteux E, Ferguson E, Tunney RJ. A mixed methods investigation of end-of-life surrogate decisions among older adults. BMC Palliat Care. 2020;19(1):44.
5. Huang Y, Liu H. Is there a need for advance care planning in China? An interview survey of healthcare professionals in the neurology department. Ann Palliat Med. 2021;10(11):11918-30.
6. Bakke BM, Feuz MA, McMahan RD, Barnes DE, Li B, Volow AM, et al. Surrogate decision makers need better preparation for their role: advice from experienced surrogates. J Palliat Med. 2022;25(6):857-63.
7. Jeon BM, Kim SH, Lee SJ. Decisional conflict in end-of-life cancer treatment among family surrogates: a cross-sectional survey. Nurs Health Sci. 2018;20(4):472-8.
8. Guan T, Chapman MV, de Saxe ZL, Sharma A, Chen DG, Song L. Correlates of illness uncertainty in cancer survivors and family caregivers: a systematic review and meta-analysis. Support Care Cancer. 2023;31(4):242.
9. Sun WN, Hsu HT, Huang YT, Ko NY, Chen JL. Investigating stress, social support, and decisional conflict dynamics in surrogates of intensive care unit patients with cancer. Support Care Cancer. 2024;32(11):722.
10. White DB, Carson S, Anderson W, Steingrub J, Bird G, Curtis JR, et al. A multicenter study of the causes and consequences of optimistic expectations about prognosis by surrogate decision-makers in ICUs. Crit Care Med. 2019;47(9):1184-93.
11. Mousavi SL, Saki M, Mohammadipour F, Gholami M, Almasian M, Pour FJ. Experiences of cancer patients about seeking health information: a qualitative study. Support Care Cancer. 2022;30(9):7697-704.
12. Gallagher MW, Long LJ, Richardson A, D'Souza JM. Resilience and coping in cancer survivors: the unique effects of optimism and mastery. Cognit Ther Res. 2019;43(1):32-44.
13. Shanley C, Fetherstonhaugh D, McAuliffe L, Bauer M, Beattie E. Providing support to surrogate decision-makers for people living with dementia: healthcare professional, organisational and community responsibilities. Health Soc Care Community. 2017;25(5):1563-70.
14. Li X, He L, Wang J, Wang M. Illness uncertainty, social support, and coping mode in hospitalized patients with systemic lupus erythematosus in a hospital in Shaanxi, China. PLoS One. 2019;14(2):e0211313.
15. Wu S, Guo X, Tang H, Li Y, Dong W, Lu G, et al. The relationship between illness uncertainty and social support among cancer patients: a meta-analysis. Cancer Nurs. 2024. doi:10.1097/NCC.0000000000001328
16. Reinken DN, Reed SM. Mishel's uncertainty in illness theory: informing nursing diagnoses and care planning. Int J Nurs Knowl. 2023;34(4):316-24.
17. Kunzler BR, Foy AJ, Levi BH, Van Scoy LJ, Lehman EB, Smith TJ, et al. Does caregiver participation in advance care planning using a decision support tool together with patients reduce caregiver strain, burden and anxiety over time? A post-hoc analysis of a randomized controlled trial. Am J Hosp Palliat Care. 2022;39(7):757-61.
18. Han Z, Su J, Ma G, Fang Y, Tang L, Ma X. Factors influencing the participation of surrogate decision-makers for advanced cancer patients in advance care planning: a cross-sectional study. PLoS One. 2025;20(6):e0325551.
19. Choi S, Kim M, Park JE, Kang J, Woo K. Decision-making factors related to palliative care and hospice use in the community: a systematic review based on Andersen's behavioural model of health services use. BMC Palliat Care. 2025;24(1):246.
20. Deng WG, Wang P, Liu SS. Examining the issues and solutions for testing the dimensions of LOT and LOT-R using traditional methods. J Shandong Normal Univ (Nat Sci Ed). 2009;24:51-4.

21. Xiao SY. Theory and research applications of the Social Support Rating Scale. J Clin Psychiatry. 1994;2:98-100.
22. Wang WY, Wang S, Xia DS, Cui GP, Wang CM. Study on reliability and validity of Chinese version of Mishel Uncertainty in Illness Scale Family Member Form. Chin Nurs Res. 2012;26:662-3.
23. Wang TH, Wang W, Shen WT, Shi BX. Participation in advance care planning and associated factors among surrogate decision makers of patients with hematologic malignancies. Chin Gen Pract. 2022;25:859-66.
24. Yang YL, Liu L, Wang XX, Wang Y, Wang L. Prevalence and associated positive psychological variables of depression and anxiety among Chinese cervical cancer patients: a cross-sectional study. PLoS One. 2014;9(4):e94804.
25. Huang V, Lo KC, Fiocco AJ. Examining the factor structure and psychometric properties of the Chinese version of the Life Orientation Test in older Chinese immigrants. Psychol Rep. 2020;123(6):2617-36.
26. Joseph S, Sagy S. Positive psychology and its relation to salutogenesis. In: Mittelmark MB, Bauer GF, Vaandrager L, Pelikan JM, Sagy S, Eriksson M, et al., editors. The handbook of salutogenesis. Cham: Springer; 2022. p. 233-8.
27. Braun-Lewensohn O, Mayer CH. Salutogenesis and coping: ways to overcome stress and conflict. Int J Environ Res Public Health. 2020;17(18):6667. doi:10.3390/ijerph17186667
28. Lei L, Gan Q, Gu C, Tan J, Luo Y. Life-and-death attitude and its formation process and end-of-life care expectations among the elderly under traditional Chinese culture: a qualitative study. J Transcult Nurs. 2022;33(1):57-64.
29. Wu WCH, Chen SX, Ng JCK. Does believing in fate facilitate active or avoidant coping? The effects of fate control on coping strategies and mental well-being. Int J Environ Res Public Health. 2020;17(17):6383. doi:10.3390/ijerph17176383
30. Cheng M, Luo Q, Fang C, Comery A, Troyer J. Exploring good death in China: a qualitative study from the perspectives of family members. Soc Sci Med. 2025;367:117727.
31. Chan F, Lam K, Lai D, Tong C, Lum C, Woo J. Views of family caregivers on advance care planning in advanced dementia care in Hong Kong: a qualitative thematic content analysis study. Health Sci Rep. 2025;8(7):e70983.
32. Yan Y, Derong T, Qin T, Zhi X, Xia L. Factors influencing advance care planning among cancer patients: a qualitative study. Eur J Oncol Nurs. 2025;76:102884.
33. Metzger M, Song MK, Ward S, Chang P, Hanson L, Lin FC. A randomized controlled pilot trial to improve advance care planning for LVAD patients and their surrogates. Heart Lung. 2016;45(3):186-92. doi:10.1016/j.hrtlng.2016.01.005
34. Mehrabizadeh M, Zaremohzzabieh Z, Zarean M, Ahrari S, Ahmadi AR. Narratives of resilience: understanding Iranian breast cancer survivors through health belief model and stress-coping theory for enhanced interventions. BMC Womens Health. 2024;24(1):552.
35. Parviniannasab AM, Dehghani F, Hosseini SA. The mediating role of hope in the relation between uncertainty and social support with self-management among patients with ESKD undergoing hemodialysis. BMC Nephrol. 2024;25(1):129.
36. Chen DR, Young Y, Shayya A, Perre T, O'Grady T. Cultural interplay in end-of-life care decisions: comparing advance directive beliefs and preferences among adults in the U.S. and Taiwan. BMC Palliat Care. 2025;24(1):104.
37. Leung DYP, Chung JOK, Chan HYL, Lo RSK, Li K, Lam PT, et al. Effects of a structured, family-supported, and patient-centred advance care planning on end-of-life decision making among palliative care patients and their family members: protocol of a randomised controlled trial. BMC Palliat Care. 2024;23(1):257.
38. Wang X, Wu Y, Bai X, Qiao Q, Yu L, Ge L, et al. Acceptance level of advance care planning and its associated factors among the public: a nationwide survey. BMC Palliat Care. 2024;23(1):201.
39. Fuson O, Mitra A, Little C, Hiatt S, Franklin H, Dieckmann NF, et al. Role of uncertainty in illness and coping strategies in advance directive completion in patients with end-stage liver disease. J Clin Gastroenterol. 2025;59(1):90-6.
40. Li Z, Beck ER, McIlfatrick S, Hasson F. Chinese diaspora communities' knowledge of and engagement with advance care planning: a systematic integrative review. J Palliat Care. 2023;38(3):381-97.
41. Needle JS, Friebert S, Thompkins JD, Grossoehme DH, Baker JN, Jiang J, et al. Effect of the family-centered advance care planning for teens with cancer intervention on sustainability of congruence about end-of-life treatment preferences: a randomized clinical trial. JAMA Netw Open. 2022;5(7):e2220696.
42. Zuo T, Yeap SY, Lu G. Navigating the delicate balance of autonomy and harmony: a case study on the cultural adaptation of palliative care interventions in China. BMC Palliat Care. 2025;24(1):168.