Aging Prisoners’ Treatment Selection: Does Prospect Theory Enhance Understanding of End-of-Life Medical Decisions?

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Purpose: With the rapid growth in the older inmate population and the economic impact of end-of-life treatments within the cash-strapped prison system, consideration should be given to inmate treatment preferences. We examined end-of-life treatment preferences and days of desired life for several health scenarios among male inmates incarcerated primarily for murder.

Methods: Inmates over the age of 45 who passed a cognitive screening completed face-to-face interviews (N=94; mean age=57.7; SD=10.68).

Results: We found a 3-way interaction indicating that the effect of parole expectation on desire for life-sustaining treatment varied by race/ethnicity and treatment. Minority inmates desired cardiopulmonary resuscitation or feeding tubes only if they believed that they would be paroled. The model predicting desire for palliative care was not significant. Future days of desired life were related to prospective health condition, fear of death, negative affect, and trust in prison health care. Caucasian inmates expressed a desire for more days of life out of prison, whereas minority inmates did not differ in days of desired life either in or out of prison. Minorities wanted more days of life than Caucasians but only if they believed that they would be paroled.

Implications: End-of-life care for the burgeoning inmate population is costly, and active life-sustaining treatments may not be desired under certain conditions. Specifically, expectation of parole but not current functional ability interacts with future illness condition in explaining inmates’ desire for active treatment or days of desired life in the future.

Key Words: Medical decision making, Prison, End-of-life, Race/ethnicity

The number of older adult inmates has quadrupled in the past 25 years as a result of demographic changes and increased sentence length. This trend is especially significant in the United States, which incarcerates more individuals per capita than any other nation (Wilper et al., 2009). Although inmates have Constitutional rights to health care, cuts in state funding elicit questions of practicality, cost, and ethics in the accessibility of health care to older and infirm inmates (Aday, 2003). Due to a lifetime of poor health practices, older inmates are a group with disproportionally higher rates of health problems (i.e., physical and mental illness along with substance abuse) than the overall U.S. population (Hammett, Roberts, & Kennedy, 2001;
Moreover, incarcerated older men who report feeling abandoned by God also report desire for hastened death and more symptoms of depression (Allen, Phillips, Roff, Cavanaugh, & Day, 2008). Thus, inmates are a particularly vulnerable population within which to study end-of-life medical decision making and treatment preferences.

In their national survey of federal and state prisons as well as local jails, Wilper and colleagues (2009) found that many inmates with serious chronic health conditions failed to receive adequate care. These authors defined “adequate care” as having access to five clinically meaningful treatments: (a) medical examinations, (b) pharmacotherapy, (c) prescription medications, (d) laboratory tests, and (e) acute care for serious injuries. Mara (2002) noted that most prison facilities were designed for younger inmates and lack environmental supports (e.g., grab bars and lever handles in showers) necessary for older inmates in need of long-term care. The Pew Center on the States (2008) estimated that the annual average cost of care for geriatric inmates was $70,000, two to three times the cost of care for an inmate under the age of 50. Despite the glaring need reflected in these epidemiological data, a paucity of research has explored older inmates’ personal desires and expectations regarding care near the end-of-life (Aday, 2003; Phillips, Allen, Salekin, & Cavanaugh, 2009).

**Prospect Theory**

The primary aim of this study was to assess the applicability of Prospect Theory (Kahneman & Tversky, 1979) as a theoretical framework to explore how functional ability and the prison context might influence inmates’ prospective medical decisions regarding life-sustaining treatment and days of desired life. Prospect Theory was developed by Kahneman and Tversky (1979) and provides a theoretical framework for how people make decisions between two choices. This theory states that people will select the option with the highest subjective utility, whether or not that decision provides the highest objective gain, recognizing different points of subjective reference. Prospect Theory suggests that temporally distal prospects, or choices, will seem to be more similar than temporally proximal prospects. For example, the disparity between two end-of-life treatments will be perceived differently based on when the choice regarding the two treatments arises (immediately or in several years). In addition, the current health status of the person presented with these two options will further influence the manner in which the options are perceived. Thus, individuals in poor health will view future life in unhealthy states (e.g., Alzheimer’s disease [AD], cancer with pain) more positively and report a greater desire for life-sustaining treatment or more days of desired life relative to healthier individuals reporting their treatment wishes for the same conditions. An interaction between current health or functional status and future health condition would support the tenets of prospect theory.

Winter, Lawton, and Ruckdeschel, (2003), Winter, Moss, and Hoffman (2009), and Winter and Parker (2007) examined Prospect Theory as it applied to health status within community-dwelling adults’ prospective end-of-life decision making. Notably, these authors included adequate samples of Caucasian and African American community-dwelling adults, consistently finding a main effect of race/ethnicity wherein African Americans desired more active treatment or more days of life. In support of Prospect Theory, Winter and colleagues found an interaction between current functioning and future health condition wherein unhealthy participants desired more life within the context of compromised health in the future than did currently healthy individuals.

**Prospect Theory and the Prison Context**

Additionally, Prospect Theory may be useful in understanding treatment preferences within the context of prison in comparison with treatment preferences among aging inmates who expect to be paroled. The difference between having poor health in prison five years from now and poor health out of prison ten years from now (i.e., parole expected) may be substantially different from having poor health in prison five years from now and poor health in prison ten years from now (i.e., parole not expected). Thus, interaction effects can be expected such that the effect of parole belief on future health prospects may lead to different medical decisions.

The current study innovatively expands upon Phillips and colleagues’ (2009) pilot study at Hamilton Prison for the Aged and Infirm by examining findings in comparison with what would be predicted by prospect theory within the
context of health condition and parole expectation. Moreover, this study is adequately powered to detect potential interaction effects that would support prospect theory within the domains of health or prison context. Our pilot study identified a few important factors in treatment selection, including age at end of sentence (e.g., whether or not the inmate might be expected to live until release), race/ethnicity, and death anxiety. In the current study, we expand these factors to include mental health, religiosity, and trust in the health care system as well as fear of death.

Factors Potentially Associated With Race/Ethnicity and Treatment Preference Agreement

Mental Health

Significant mental health problems exist among older inmates in U.S. prisons (Loeb & AbuDagga, 2006; Wilper et al., 2009). Aday (2003) reviewed several U.S. studies of older inmates and noted that depression, guilt, worry, and psychological stress are common. Depression has shown conflicting patterns of association with life-sustaining treatment preferences (Blank et al., 2001; Garrett, Harris, Norburn, Patrick, & Danis, 1993; Stapleton, Nielsen, Engelberg, Patrick, & Curtis, 2005).

Religiosity

Many authors mention religion or spirituality as a factor in end-of-life decision making, but few have empirically examined its role (Carmel & Mutran, 1997a, 1997b; Winter, Dennis, & Parker, 2007–2008). Winter and colleagues (2007–2008) conducted telephone interviews of 300 community-dwelling Caucasian and African American individuals and found that a five-item scale measuring the importance of “God’s will” mediated racial differences in treatment preferences for most prospective health scenarios. Additionally, Carmel and Mutran (1997a, 1997b) found that Israelis over the age of 70 years were more likely to report desire for life-sustaining treatment when they also reported greater religiosity. It stands to reason, then, that inmates with greater religiosity may desire more days of life regardless of health or parole expectation in comparison with inmates reporting less religiosity.

Trust in the Health Care System

Trust in health care can be differentially affected by cultural experiences and is essential to the development of the doctor–patient relationship and the success of therapeutic interventions (Hall, Dugan, Zheng, & Mishra, 2001). Among inmates, it may be difficult to separate the therapeutic and security roles of health care workers (Feron, Tan, Pestiaux, & Lorant, 2008), making it hard to place trust in the relationship.

Fear of Death

Through structural equation modeling on a sample of Israeli’s aged 70 years and older, Carmel and Mutran (1997b) found that, in addition to religiosity, fear of death significantly explained variance in desire for life-sustaining treatment. This construct may also play a role in inmates’ desire for treatment or days of desired life in various prospective medical conditions.

Need for Study

Combining our pilot findings (Allen et al., 2008; Phillips et al., 2009) with the theoretical predictions of Prospect Theory (Winter & Parker, 2007; Winter et al., 2003, 2009), we explored the influence of subjective parole expectation, race/ethnicity, current functional health, psychosocial factors (positive and negative affect, depression, fear of death, religiosity), and trust in prison health care on active life-sustaining treatment preferences [cardiopulmonary resuscitation (CPR) or feeding tube], desire for palliative care, and days of desired life among older male inmates. Inclusion of subjective parole expectation and trust in prison health care provide novel and more direct tests of inmates’ beliefs regarding prospects of living and dying within prison. In accordance with Prospect Theory, we hypothesized interactions between functional status and prospective health condition and between parole expectation and prospective health condition. Specifically, we expected that healthy inmates would prefer less active treatment, more palliative care, and fewer days of life (Hypothesis 1) for the same prospective health condition in comparison with frail older inmates (Winter & Parker, 2007; Winter et al., 2003, 2009). Our second hypothesis was that inmates who expected to be paroled would prefer life-sustaining treatments, less palliative care, and more days of life for the same prospective health condition more often than those who did not expect to be paroled (Phillips et al., 2009). Finally, we expected psychosocial variables (e.g., positive and
negative affect, depression, fear of death, religiosity) and trust in prison health care would influence end-of-life treatment decisions.

**Methods**

**Setting and Participants**

Data collection occurred at Hamilton Aged and Infirmed Prison (Hamilton A & I)—Alabama’s primary institution for incarcerated older males. Hamilton A & I is a medium security prison of 300 inmates. Inmates routinely interacted with or observed other inmates with physical limitations, feeding tubes, cognitive decline, or pain. Furthermore, inmates often commented during interviews about experiences with infirmed inmates, suggesting an awareness of other frail inmates’ quality of life. Within this facility, all inmates are allowed to have a religious text of their choosing, even in solitary confinement. Two volunteer chaplains and members of several area churches visit the prison to hold Bible studies during the week. Religious services are held every weekend.

Ninety-four inmates over the age of 45 (approximately half of the population \(N = 150\)) at the time of data collection passed a cognitive screening examination and participated. The mean age of participants was 57.7 \((SD = 10.68)\). A 10- to 15-year difference between the health of prisoners and that of people in the general population has been identified (Dawes, 2002; Wilper et al., 2009), making prisoners’ physical health resemble that of someone 10 years older than their chronological age. Thus, it is believed that participants’ physical health in the current study would be similar to a community-dwelling adult who was approximately 67.7 years. Demographic characteristics are reported in Table 1. The percentage of inmates reporting functional limitations for each of eight functional items are reported in Table 2.

Fifty-seven inmates (61%) were incarcerated for their first offense and 37 (39%) were repeat offenders. Length of incarceration data were available for 63 inmates, with a range of 1–297 months (e.g., 24.75 years) and a mean of 25.6 months \((SD = 37.67)\). Of the 94 inmates, 42 (44.7%) did not believe that they would receive parole and 52 (55.3%) believed that they would be paroled. Of those who believed that they would not be paroled, 29 (30.9% of total) were

**Table 1. Inmate Demographic Data by Parole Likelihood or Racial Group**

<table>
<thead>
<tr>
<th>Parole</th>
<th>Age (years)</th>
<th>MMSE</th>
<th>WRAT</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlikely</td>
<td>58.25 (10.91)</td>
<td>25.56 (3.12)</td>
<td>80.67 (18.01)</td>
<td>11.22 (2.80)</td>
</tr>
<tr>
<td>Likely</td>
<td>57.02 (10.47)</td>
<td>24.71 (4.10)</td>
<td>79.10 (27.93)</td>
<td>10.93 (3.74)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>58.54 (11.24)</td>
<td>25.00 (3.78)</td>
<td>78.76 (22.88)</td>
<td>10.41 (3.16)</td>
</tr>
<tr>
<td>Minority</td>
<td>56.29 (9.64)</td>
<td>24.41 (3.30)</td>
<td>81.62 (23.23)</td>
<td>12.26 (3.09)</td>
</tr>
</tbody>
</table>

*Note:* Table provides \(M\) (\(SD\)). MMSE = Mini-Mental State Examination; WRAT = Wide Range Achievement Test.

**Table 2. Response Frequencies for Functional Status Items From the SF-36**

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes, limited (a lot or a little)</th>
<th>Not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathing or dressing yourself</td>
<td>24 (25.5)</td>
<td>70 (74.5)</td>
</tr>
<tr>
<td>Bending, kneeling, or stooping</td>
<td>65 (69.1)</td>
<td>29 (30.9)</td>
</tr>
<tr>
<td>Lifting or carrying something weighing 5–10 pounds</td>
<td>34 (36.2)</td>
<td>60 (63.8)</td>
</tr>
<tr>
<td>Walking one lap</td>
<td>40 (42.6)</td>
<td>54 (57.4)</td>
</tr>
<tr>
<td>Walking a couple of laps</td>
<td>41 (43.6)</td>
<td>53 (56.4)</td>
</tr>
<tr>
<td>Moderate activities, such as mopping or other chores</td>
<td>51 (54.3)</td>
<td>43 (45.7)</td>
</tr>
<tr>
<td>Walking more than a mile</td>
<td>56 (59.6)</td>
<td>38 (40.4)</td>
</tr>
<tr>
<td>Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports</td>
<td>73 (77.7)</td>
<td>21 (22.3)</td>
</tr>
</tbody>
</table>

*Note:* Participants were asked, “The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so how much?” Number outside parentheses represents the frequency of the response option (out of \(N = 94\)). Number inside parentheses represents percent of sample.
Caucasian and 13 (13.8% of total) self-identified as a member of a minority group (mostly African American). Among those who believed that they would be paroled, 30 (31.9% of total) identified as Caucasian and 22 (23.4% of total) as a member of a minority group (mostly African American). Years of education differed between Caucasians and the minority group, $F(1, 91) = 7.57, p < .01$, with those self-identified as Caucasian reporting fewer years of education. However, there were no significant differences between the racial/ethnic groups for reading ability (see Table 1). Minority inmates were significantly more likely to be repeat offenders, chi-square $(1, N = 94) = 5.20, p = .02$.

**Measures**

**Mini-Mental State Examination**

The Mini-Mental State Examination (MMSE), a well-validated measure with test–retest correlations of .80–.95 (Tombaugh & McIntyre, 1992), was used as a cognitive screen (Folstein, Folstein, & McHugh, 1975). Scores below 24 indicate cognitive impairment (Tombaugh & McIntyre, 1992). Although there are no nationally available data on MMSE scores among prison inmates, Loeb, Steffensmeier, and Kassab (2010) found an average MMSE score of 27.8 in a sample of 131 male inmates aged 50 years and older. In our prior research in the current setting (Phillips et al., 2009), we found an average MMSE between 25 and 27.

**Wide Range Achievement Test**

The Wide Range Achievement Test (WRAT) reading subtest assesses ability to recognize and name 15 letters and pronounce 42 words out of context (Wilkinson, 1993). Standard scores range from less than 45 to more than 155, with higher scores indicating higher achievement. Cronbach’s alpha ranges between .90 and .95, test–retest reliability ranges from 0.91 to 0.98. Due to low literacy levels present in the prison, this test was included to identify inmates considered to lack capacity to complete informed consent.

**Demographics**

We assessed basic demographic information including age, amount of education, self-reported ethnicity, reason for incarceration, past convictions, and expectations regarding parole (yes/no).

Inmates completed eight-items that assess physical functioning with a resultant Cronbach’s $\alpha = .92$ (Ware & Sherbourne, 1992). Three alterations were made in accordance with Walters, Munro, and Brazier (2001): The order of the physical items was reversed so that the least demanding activity was given first, wording regarding work or home was changed to reflect the prison setting, and two items were omitted that were not applicable to this prison (i.e., no stairs). Participants reported their limitations in physical functioning on a 3-point scale ranging from 0 = Yes, limited a lot to 100 = Not limited at all. Scores on this measure range from 0 to 800.

**Positive and Negative Affect Schedule**

The Positive and Negative Affect Schedule (PANAS) consists of 10 positive and 10 negative words, and respondents rate how much each word described their mood on a 5-point scale ranging from not at all to extremely (Watson, Clark, & Tellegen, 1988). Scores range from 10 to 50 on the Positive and Negative Affect scales. The PANAS has been shown to have good internal consistency for positive affect ($\alpha = .84$) and for negative affect ($\alpha = .87$) scales. The scales have good discriminant validity, $r = −.09$.

**Center for Epidemiological Studies–Depression Scale**

Frequency of depressive symptoms within the past week was assessed using the 20-item Center for Epidemiological Studies–Depression scale (CES-D), scores range from 0 to 60 with higher scores indicating more symptoms of depression (Radloff, 1977). A high degree of internal consistency has been found with older adults as indicated by Cronbach’s $\alpha$ between .86 and .89 (Schein & Koenig, 1997).

**Duke University Religion Index**

The Duke University Religion Index (DUREL) addresses organizational (e.g., attending services), nonorganizational (e.g., praying), and intrinsic (e.g., incorporation into daily life) religiosity (Koenig, Parkerson, & Meador, 1997). The first item evaluates the frequency of organizational religious
activities and the second question asks about frequency of nonorganizational religious practices. Participants reported their level of church attendance on a scale of 0 = never to 6 = more than once a week and their frequency of prayer on a scale of 1 = rarely or never to 6 = more than once a day. The remaining three items create a measure of intrinsic religiousness adapted from Hoge (1972). Participants respond on a scale from 1 = definitely not true to 5 = definitely true with total scores ranging from 3 to 15. Koenig and colleagues (1997) report a Cronbach’s α of .75 for this scale and showed only moderate correlation with the first two items.

Multidimensional Fear of Death Scale

The 38-item measure used in this study consists of seven subscales with Cronbach’s alpha ranging from .44 to .80 (Hoelter, 1979). Respondents rate how much they agree with each item on a 5-point scale ranging from strongly agree to strongly disagree, low scores indicate greater fear of death, with scores ranging from 38 to 190. The measure has good test–retest stability (α = .61–.81; Neimeyer & Moore, 1994). Neimeyer and Moore (1994) reported support for an overall construct of death anxiety; thus, a mean score was used to represent this construct with a resulting Cronbach’s α of .81 in the current study.

Trust in Prison Health Care

This 15-item questionnaire consists of the General Trust in Physicians Scale (Hall, Camacho, Dugan, & Balkrishnan, 2002; α = .89) plus three items from a “distrust of research and the medical community” questionnaire developed by Corbie-Smith, Thomas, and St George (2002) and one global item inquiring about “adequate” health care based on qualitative responses from Phillips and colleagues (2009). Items were coded using a 5-point scale that asked respondents to rate the degree that they agree with statements about physicians ranging from strongly agree to strongly disagree, scores range from 19 to 95. This measure demonstrated good internal consistency (α = .93).

Life-Support Preferences/Predictions Questionnaire

The Life-Support Preferences/Predictions Questionnaire (LSPQ) describes nine illness scenarios varying in severity of illness, prognosis, and level of pain (Bookwala et al., 2001). An abbreviated version of the LSPQ was used including: AD, emphysema, and cancer with constant pain. Participants were asked to imagine themselves in each of these situations and rate their preference for each of three treatment options: CPR, feeding tube, and palliative care (comfort measures) only. Consequently, each participant responded to nine possible illness/treatment scenarios with a wide range of illness severity. Coppola and colleagues (1999) found high internal consistency (α = .86–.96) among preference for life-sustaining treatments by scenario for these illnesses. Participants indicated their preferences on a scale from 1 = definitely don’t want to 7 = definitely want treatment.

Prospective Health Questionnaire

This measure was adapted to the prison setting resulting in six conditions: limited to the bed or chair outside of prison, limited to the bed or chair in prison, confused living outside of prison, confused living in prison, experience of pain outside of prison, and experience of pain living in prison (Winter et al., 2003). For each condition, the inmate provided a number of days or years the participant would want to live. Participants responded using a scale ranging from 0 = no days/years to 6 = indefinite. This scale shows good internal consistency (α = .90).

Procedure

This study was approved by The University of Alabama Institutional Review Board. Measures were administered in interview format. Potential participants were given an informed consent explaining the nature of the study. If the inmate agreed to participate, the interviewer administered the MMSE and the reading subtest of the WRAT. Due to low literacy rates among inmates, if the participant scored below 15 on the MMSE or was unable to read, the interview ended and he was thanked for his time and if he scored a 15 or higher, informed consent was obtained and the interview proceeded (Phillips et al., 2009). Interviews lasted 60–90 min.

Data Analysis

Because response options for items on the LSPQ range from 1 to 7 and on the Prospective Health Questionnaire (PHQ) range from 0 to 6, we used the general linear model to examine three different models. The first examined desire for active treatment in the LSPQ, the second examined desire for palliative care (as recommended by Winter et al.,...
in the LSPQ, and the third examined days of desired life in the PHQ. Prior to descriptive and inferential analyses, each variable was evaluated for normality, missing data, and outliers to ensure all assumptions were met for each statistical test. There was a small amount of missing data in the data set (no variable had more than three missing values and no inmate failed to respond to more than two items), which was replaced using the Expectation Maximization algorithm. The general linear model within SPSS version 18 was used to conduct analyses. Effect sizes were calculated using partial eta squared and interpreted according to Cohen’s (1973) guidelines: .01 as a small effect, .06 as a moderate effect, and .14 as a large effect.

In support of prospect theory, we would expect significant interactions in the first model (e.g., desire for active treatment in the LSPQ) between functional status and illness (health domain) and between parole expectation and illness (prison context). In the second model (e.g., desire for palliative care), we would expect significant interactions between functional status and illness (health domain) and between parole expectation and illness (prison context). In the third model (e.g., days of desired life in the PHQ), we would expect significant interactions between functional status and health condition (health domain) and between parole expectation and location (prison context).

Results

Descriptive Characteristics

The average MMSE score was 25.18 (SD = 3.60; range 15–30) and mean WRAT-scaled reading score was 79.97 (SD = 22.86; range 0–120). The average number of years of education was 11.09 (SD = 3.25). All but one participant was willing to report the type of crime for which they had been sentenced, with the majority reporting murder (n = 39, 41.5%), followed by financial offense (n = 20, 21.3%), sexual offense (n = 19, 20.5%), drug offense (n = 10, 10.6%), and other offenses (e.g., arson, assault; n = 5, 5.3%).

Desire for Active Treatment Preferences (LSPQ)

A multivariate analysis of covariance (MANCOVA) using a 3 (illness) × 2 (treatment) × 2 (race/ethnicity) × 2 (parole expectation) design was conducted to explore desire for active treatment on the LSPQ. Illness (AD, emphysema, and cancer with pain) and active treatment (CPR and feeding tube) were analyzed as within-subjects factors. Race/ethnicity (Caucasian and minority) and parole expectation (expect/do not expect parole) were analyzed as between-subjects factors. Functional status (from the MOS); positive and negative affect (from the PANAS); depression (from the CES-D); fear of death (from the Multidimensional Fear of Death Scale [MFODS]); measures of organizational, nonorganizational, and intrinsic religiosity (from the DUREL); and trust in prison health care were included in the model as covariates.

We observed a significant three-way interaction between illness, race/ethnicity, and parole expectation, Wilks’ λ = .89, F(2, 80) = 5.01, p = .009, η² = .11, which is illustrated in Figure 1. There was also a significant four-way interaction between illness, treatment, race/ethnicity, and parole expectation, Wilks’ λ = .91, F(2, 80) = 4.11, p = .02, η² = .09, which is illustrated in Figure 2. Parole expectation did not impact Caucasian inmates’ desire for active treatment within the context of emphysema or cancer with pain. Caucasian inmates who believed that they would be paroled had greater desire for active treatment within the context of AD. However, minority inmates who believed that they would be paroled had greater desire for active treatment within the context of AD.

Figure 1. Illness type by race/ethnicity by parole expectation interaction on preferences for active treatment.

Figure 2. Parole expectation by race/ethnicity interaction on preferences for self-administered CPR and feeding tube.
paroled had much greater desire for life-sustaining treatment regardless of illness context, whereas those who did not believe they would be paroled had much less desire for active treatment within the context of cancer with pain. These differences varied by CPR and feeding tube in the four-way interaction. None of the covariates had significant independent effects on preferences for active treatment.

** Desire for Palliative Care (LSPQ) **

A MANCOVA using a 3 (illness) × 2 (race/ethnicity) × 2 (parole expectation) design was conducted to explore desire for palliative care on the LSPQ with illness analyzed as a within-subjects factor. Functional status (from the MOS); positive and negative affect (from the PANAS); depression (from the CES-D); fear of death (from the MFODS); measures of organizational, nonorganizational, and intrinsic religiosity (from the DUREL); and trust in prison health care were included in the model as covariates.

We did not observe any significant effects on the desire for palliative care.

** Days of Desired Life (PHQ) **

A MANCOVA using a 3 (health condition) × 2 (location) × 2 (race/ethnicity) × 2 (parole expectation) design was conducted to explore days of desired life. Health condition (physical, cognitive, or painful) and location (in or out of prison) were within-subjects variables. Functional status (from the MOS); positive and negative affect (from the PANAS); fear of death (from the MFODS); measures of organizational, nonorganizational, and intrinsic religiosity (from the DUREL); depression (from the CES-D); and trust in prison health care were included in the model as covariates.

We observed a significant main effect of health condition, Wilks’ $\lambda = .89$, $F(2, 80) = 5.02$, $p = .009$, $\eta^2 = .11$, indicating that inmates preferred the least days of life when limited to a bed or chair, somewhat more when confused, and the most when they had a painful condition. There was a significant interaction between location and race/ethnicity, Wilks’ $\lambda = .94$, $F(1, 81) = 5.96$, $p = .02$, $\eta^2 = .07$. Although both groups tended to want more life out of prison than in prison, this effect was stronger for minorities than for Caucasians. There was a significant interaction between race/ethnicity and parole expectation, $F(1, 81) = 4.38$, $p = .04$, $\eta^2 = .05$, indicating that minorities wanted more days of life than Caucasians, but only if they believed that they would be paroled. We also observed significant main effects of negative affect, $F(1, 81) = 13.17$, $p < .001$, $\eta^2 = .14$, fear of death, $F(1, 81) = 4.25$, $p = .04$, $\eta^2 = .05$, and trust in
prison health care, $F(1, 81) = 3.94, p = .05, \eta^2 = .05$, indicating that inmates desired more days of life when they had less negative affect, a greater fear of dying, and less trust in the prison health care system.

**Discussion**

Our findings expand upon Phillips and colleagues (2009) by using Prospect Theory (Kahneman & Tversky, 1979) to guide predictions about desire for life-sustaining treatment, palliative care, and days of desired life within the context of future health conditions (Winter & Parker, 2007; Winter et al., 2003, 2009). With regard to our first hypothesis in the health domain, we did not find support for the application of Prospect Theory in Model 1 (desire for active treatment), 2 (palliative care), or 3 (days of desired life) using current functional ability as an indicator of health. With regard to our second hypothesis in the prison domain, we only found support for Prospect Theory in Model 1 (desire for active treatment) but not in Model 2 (palliative care) or three (days of desired life) using parole expectation as an indicator of the prospective prison context.

**Hypothesis 1**

The lack of support for Prospect Theory in the health domain is surprising, given the robust findings in support of Prospect Theory among community-dwelling adults (Winter & Parker, 2007; Winter et al., 2003, 2009). Although our sample reported a range of functional ability (Table 2), it may be that life in the prison setting does not demand a level of functional ability commensurate with that needed among community-dwelling older adults to maintain the expectation of safety and a reasonable quality of life. Aday (2003) and Yates and Gillespie (2000) discussed the concept of “prisonization,” in which inmates who have spent a long time incarcerated hold different expectations of life than those who have spent relatively less time behind bars. Available data showed that our sample of older male inmates had a broad range in length of incarceration, with a positively skewed distribution. Anecdotally, a culture of care existed within the “inmate family” such that younger and relatively healthy inmates assisted older frail inmates to meals and medication calls. Moreover, the presence of frail and cognitively impaired inmates, one with a feeding tube, may have had a dramatic effect on inmates’ beliefs about quality of life. Some support for this notion comes from the within-subject main effect of prospective health conditions found in Model 3 on the PHQ. Inmates desired more days of life for painful conditions than for conditions with physical or cognitive limitations. It could be that inmates perceive painful conditions as temporary, whereas their observations of cognitive and physical limitations among fellow inmates show these conditions to be permanent.

**Hypothesis 2**

Uniquely, we also expanded the theoretical application of Prospect Theory to the prison context by exploring potential interactions between inmates’ subjective expectation of parole and future health conditions. Figures 1 and 2 illustrate significant three- and four-way interactions from Model 1 between illness, race/ethnicity, and parole expectation (Figure 1) and between illness, treatment, race/ethnicity, and parole expectation (Figure 2). Caucasian inmates who believed that they would be paroled had greater desire for active treatment within the context of AD. However, minority inmates who believed that they would be paroled had much greater desire for life-sustaining treatment regardless of illness context, whereas those who did not believe they would be paroled had much less desire for active treatment within the context of cancer with pain. These differences varied by CPR and feeding tube in the four-way interaction. This finding is partially indicative of the active approach to end-of-life care preferred by African Americans (Kwak & Haley, 2005; Winter et al., 2007–2008, 2009), even though individual preferences must always be recognized as potentially overriding mean-level group differences. Nevertheless, it also expands upon our prior finding (Phillips et al., 2009) that male inmates prefer active life-sustaining treatment when there is a possibility that they will live until they could be paroled. The current study directly measured parole expectation rather than relying on a proxy measure of potential parole (e.g., age at end of sentence).

Curiously and in contrast with the recommendations of Winter and colleagues (2007–2008) to include an independent evaluation of desire for palliative care without reference to active life-sustaining treatments, the model predicting desire for palliative care was not significant. It could be that inmates’ low literacy limited their understanding of the term “palliative care,” even though interviewers provided a definition. It is likely that a
qualitative approach to exploring inmates’ notions about palliative care as an end-of-life treatment option would afford more information about inmates’ treatment wishes, values, and beliefs.

In Model 3 with the PHQ, we found a significant within-subjects effect of health condition and significant interactions between location and race/ethnicity and between race/ethnicity and parole expectation. Inmates preferred the least days of life when limited to a bed or chair, somewhat more when confused, and the most when they had a painful condition. It could be that inmates perceive painful conditions as temporary, whereas their observations of cognitive and physical limitations among fellow inmates show these conditions to be permanent with a negative impact on quality of life.

**Within-Subjects Effects and Psychosocial Variables**

Although our covariates (e.g., positive and negative affect [from the PANAS]; depression [from the CES-D]; fear of death [from the MFODS]; measures of organizational, nonorganizational, and intrinsic religiosity [from the DUREL]; trust in prison health care) had no effect in Model 1 or 2, we found significant effects in Model 3 for negative affect, fear of death (see also Carmel & Mutran, 1997b), and trust in prison health care. Inmates desired more days of life when they had less negative affect, a greater fear of dying, and less trust in the prison health care system. In contrast, depression, positive affect, and religiosity were not found to influence days of desired life. It may be that negative affect encompasses a broader array of emotion than symptoms of depression and therefore better captured the emotional experience of older male prison inmates. We replicated findings from our pilot study (Phillips et al., 2009) showing that fear of death, or death anxiety, had an impact on end-of-life decision making among older inmates. Regarding trust in prison health care, it may be particularly difficult for inmates to separate the therapeutic and security roles of prison health care workers (Feron et al., 2008), making it hard to place trust in the relationship. Future research should use mixed methods to explore the impact of living closely with inmates with dementia or with feeding tubes and specific relationships with prison health care workers on the prospective health expectations and treatment desires of older male inmates.

It is curious that we did not find an impact of religiosity on treatment wishes or days of desired life in the current sample. This is in direct contrast with prior findings among community-dwelling older adults (Carmel & Mutran, 1997a, 1997b; Winter et al., 2007–2008) and with our prior findings regarding inmates’ feelings of abandonment by God and a desire for hastened death (Allen et al., 2008). Although the perceived presence of a relationship with God may make the experience of living in prison more bearable (see Winter et al., 2007–2008 regarding the mediating effect of “God’s will” on prospective treatment decisions), religiosity is a personal and subjective experience that is difficult to measure quantitatively. Our use of the DUREL may have limited our ability to detect true effects of religion in the domain of prospective medical treatments or days of desired life. Future mixed method studies should explore the impact of religious coping strategies and perceived relationship with God or a Higher Power on desire for life within the prison setting.

**Limitations**

As in any research, limitations of this study must be noted. First, this study was conducted in one state prison in the South with predominately Caucasian or African American inmates and our findings cannot be extrapolated to other racial/ethnic groups or geographic areas. Second, Hamilton Prison is for male inmates; generalization to female inmates cannot be made. Like many studies examining the impact of a variety of factors on end-of-life treatment preferences, the findings of this study are based on vignettes and not actual medical decisions of these inmates. Of necessity, this study offers limited insight into the real-time decisions and treatment preferences made by older male inmates during the course of a life-threatening illness.

**Implications and Future Directions**

Despite these limitations, this study makes a unique contribution to our understanding of the aging male inmate and factors driving his end-of-life decision making. Our findings build upon prior work by placing our exploration of aging inmates’ end-of-life treatment selection within the context of Prospect Theory and using the inmates’ subjective expectation of parole as a primary variable of interest. The increased number of aging inmates, their particular vulnerability in terms of physical and mental health, and the tremendous cost associated with caring for these individuals within the
prison setting has repeatedly made popular press as well as resulted in several scholarly papers regarding solutions to this growing problem. Our findings can be used to understand the types of interventions that may be desired by older inmates, with the ultimate goal of providing cost-effective quality care for older inmates within the prison system. Specifically, negative affect and fear of dying may be ameliorated by greater accessibility within the prison system to prison-based hospice programs that include inmates serving as hospice volunteers. The presence of inmate volunteers within chronic and palliative care clinics within the prison system may also address the lack of trust inmates have in prison health care. Given the demographic imperative and the enormity of the cost of caring for aging inmates, creative solutions are warranted to provide quality of care that is in line with autonomous treatment preferences. In particular, alternatives to imprisonment for terminally ill inmates could be explored (Loeb et al., 2007).

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