

# Goal Navigation, Approach-Oriented Coping, and Adjustment in Young Men with Testicular Cancer

Michael A. Hoyt, Ph.D.<sup>1,2</sup> · Kristi E. Gamarel, Ph.D.<sup>3</sup> · Christopher S. Saigal, M.D.<sup>4,5</sup> · Annette L. Stanton, Ph.D.<sup>5,6,7</sup>

© The Society of Behavioral Medicine 2016

## Abstract

**Background** Cancer can challenge important life goals for young adult survivors. Poor goal navigation skills might disrupt self-regulation and interfere with coping efforts, particularly approach-oriented attempts. Two studies are presented that investigated relationships among goal navigation processes, approach-oriented coping, and adjustment (i.e., social, emotional, and functional well-being) in separate samples of young adults with testicular cancer.

**Methods** In study 1, in-depth interviews ( $N=21$ ) were analyzed using thematic analysis to understand experiences of goal pursuit following cancer. In study 2, 171 men completed

measures of goal navigation, coping, and adjustment to cancer.

**Results** In study 1, three prominent themes emerged: goal clarification, goal engagement and disengagement, and responses to disrupted goals. Regression analyses in study 2 revealed that goal navigation skills were positively associated with emotional ( $B=.35, p<.001$ ), social ( $B=.24, p<.01$ ), and functional ( $B=.28, p<.001$ ) well-being, as was approach-oriented coping ( $B=.22, p<.01$ ;  $B=.32, p<.001$ ;  $B=.26, p<.001$ , respectively). Goal navigation moderated associations between approach-oriented coping and well-being, such that those with low goal navigation ability and low approach-oriented coping reported lower well-being.

**Conclusions** Goal navigation skills and approach-oriented coping have unique and interactive relationships with adjustment to testicular cancer. They likely represent important independent targets for intervention, and goal navigation skills might also buffer the negative consequences of low use of approach-oriented coping.

**Electronic supplementary material** The online version of this article (doi:10.1007/s12160-016-9785-9) contains supplementary material, which is available to authorized users.

✉ Michael A. Hoyt  
michael.hoyt@hunter.cuny.edu

<sup>1</sup> Department of Psychology, Hunter College, City University of New York, 695 Park Avenue, Room HN-611, New York, NY 10065, USA

<sup>2</sup> Department of Psychology, Graduate Center, City University of New York, New York, NY, USA

<sup>3</sup> Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI, USA

<sup>4</sup> Department of Urology, David Geffen School of Medicine, University of California, Los Angeles, Los Angeles, CA, USA

<sup>5</sup> Jonsson Comprehensive Cancer Center, University of California, Los Angeles, Los Angeles, CA, USA

<sup>6</sup> Department of Psychology, University of California, Los Angeles, Los Angeles, CA, USA

<sup>7</sup> Cousins Center for Psychoneuroimmunology, Semel Institute, University of California, Los Angeles, Los Angeles, CA, USA

**Keywords** Coping · Goal navigation · Adjustment · Young adults · Testicular cancer · Oncology

## Background

Cancer diagnosis and treatment can result in disruptions in daily activities, health status, interpersonal relations, and sense of self [1]. Such challenges can lead to actual or perceived blockage to important life goals [2, 3]. Concerns about the achievement of life goals may be especially distressing for adolescents and young adult survivors [4–6], who are negotiating greater autonomy across life domains and are motivated to achieve future goals. Adjustment to challenged goals constitutes adaptive self-regulation [7] and may be particularly

critical when cancer occurs in early adulthood [8, 9]. Understanding the skills young adult cancer survivors need to navigate challenges to their goals may help facilitate adjustment. Accordingly, study 1 utilizes qualitative interviews to gain a rich description of young men's cancer experiences. The second study builds upon a central observation from study 1 to test relationships among goal navigation skill and indicators of physical and psychological adjustment to cancer.

Theories of self-regulation typically assume that management of personal goals can promote well-being by providing structure for building a successful life and engaging in meaningful activities [10]. Goal navigation skills include the abilities to identify new and existing goals, which serve to support health-related quality of life [11]. Adaptive adjustment to goals that are impeded or blocked includes the ability to disengage from goals that are no longer attainable and to pursue realistic goals [7]. Effective goal adjustment is associated with higher subjective well-being [7, 12], whereas relentless pursuit of unattainable goals can compromise well-being [13]. At the same time, reengagement in meaningful alternative goals is associated with positive changes in self-perception, interpersonal relationships, and sense of meaning [14].

Cancer survivors often need to readjust goals to be more achievable than pre-diagnosis goals [2, 14]. Young adults with less advanced goal navigation skills may be particularly vulnerable when facing cancer-related goal blockage. Theory and empirical findings support improved regulation across the life span, including evidence that people become better at disengaging from unattainable goals and finding new goals as they age [7, 15]. Given strong associations between goal attainment and subjective well-being among young adults [16, 17], we suggest that the psychological benefits from a young adult's capacity to navigate life goals may play an important role in cancer adjustment. Greater understanding of goal navigation and the interrelationships with coping efforts in young survivors will enhance our ability to develop more effective psychosocial treatments.

Goal navigation and efforts to cope with cancer-related stressors are unique, although overlapping, processes. For instance, approach-oriented coping strategies (e.g., information seeking, emotional expression) and goal reengagement are independently associated with psychological adaptation among adults living with cancer [14]. Yet, the ways in which young men cope with cancer-related challenges are not well understood, and in general, the impact of coping attempts on psychological adjustment is mixed. For example, adolescents with chronic illness who engage in more approach-directed coping strategies and less avoidance coping have better adjustment [18, 19]. Approach-oriented coping efforts promote amelioration of changeable problems, effective regulation of emotion, and acquisition of useful social support [9]. However, active coping and problem-solving strategies can also be associated with worse adjustment [20]. Several

explanations could account for conflicting results. Young adults who rely on approach-oriented strategies might poorly execute such efforts (e.g., navigating health-related decision making). Furthermore, the time and energy channeled into active coping might result in neglect of other goal pursuits. Effective navigation of goals and goal blockages might elicit better self-regulation and therefore allow one to benefit optimally from attempts at approach-oriented coping. That is, potential dysregulation consistent with poor goal navigation could disrupt effective management of cancer-related demands.

We conducted two studies to investigate relationships among goal navigation processes, approach-oriented coping, and cancer-related adjustment in separate samples of young adults with testicular cancer. Testicular cancer is the most prevalent cancer among men in late adolescence and early adulthood [21]. Advances in treatments have resulted in high survival rates [22], highlighting the need for additional attention to longer-term survivorship. In study 1, qualitative interviews were conducted to better understand young men's experiences of coping with challenges and navigating life goals following testicular cancer. Building on findings in study 1, we examined the extent to which goal navigation and approach-oriented coping are associated with indicators of cancer adaptation and functioning in study 2.

Consistent with self-regulation theory, we hypothesized that individuals who use more deliberate and effortful coping would have better adaptation to cancer. Furthermore, individuals who use more approach-oriented coping may be more likely to benefit from efforts at formulating and engaging in personal goals after a stressful event [14]. Accordingly, we hypothesized that the associations between approach-oriented coping and adjustment indicators would be moderated by goal navigation, such that young men with greater approach-oriented coping would have better adjustment than those with relatively greater goal navigation skill. Conversely, we expected that the benefits of approach-oriented coping efforts would be thwarted for those with lower goal navigation skills.

## Study 1

### Method

#### *Participants*

Participants were recruited through the California Cancer Registry and invited to participate in a study on "health-related quality of life." Eligibility criteria included men between the ages of 18 and 29 at study enrollment with a history of histologically confirmed testis cancer. Participants with severe psychiatric disorder or cognitive impairment were excluded.

After providing informed consent, participants completed an in-depth semi-structured interview that lasted up to 90 min.

Sampling was purposive to achieve variation in demographic and clinical characteristics using the criterion of thematic saturation to determine sample size. Theoretical sampling by this method involves the collection of data to the point of thematic redundancy or saturation [23]. Thus, data collection, thematic summary, and analysis were simultaneous. Saturation was achieved with the conduct of 21 interviews. The final sample ( $N=21$ ) was on average 25 years of age ( $SD=3.2$ ; range=18 to 29 years). Half (52 %) of the sample identified as White, non-Hispanic and 33 % Hispanic/Latino; 62 % were employed full-time; 33 % were college graduates; and the average time since diagnosis was 35 months.

### *Procedure*

Following informed consent, participants were individually interviewed by the lead author using a semi-structured interview protocol (see Electronic Supplementary Material 1); participants had considerable flexibility in determining direction. The interview protocol was preceded by extensive literature review and consultation with relevant care providers to identify priority areas. Interview questions were designed to be global rather than specific and to explore participants' experiences of diagnosis, treatment, and post-treatment survivorship comprehensively. Participants were asked about their ways of coping, past and future aspirations, and perceptions of how cancer affected their goal pursuits. Interviews were audio-recorded and transcribed verbatim. Procedures were approved by the university's Institutional Review Board (IRB). Participants were compensated \$100.

### *Data Analysis*

Data analysis involved a "theoretically driven thematic analysis" approach [24]. As described by Braun and Clarke [24], thematic analysis is a foundational "method for identifying, analyzing, and reporting patterns (themes) within data" [24, p. 79]. This allows the process to be driven by the researchers' theoretical interests (i.e., goal navigation processes, coping theory).

Analysis involved data immersion, such as reading and rereading transcripts to best identify and understand the nature of codes and themes. Coding was performed by a team of four coders including the primary author, an expert consultant in qualitative methods, and two graduate students in clinical psychology. The coding sequence was conducted on a line-by-line unit of analysis using the Dedoose online system (version 4.5). First, open coding was used to form initial categories and subcategories. This involved identification of rich description of core processes of interest including goal navigation, coping,

psychological adjustment, and self-regulation. Codes and categories were emergent from the data, while theory guided data organization. For instance, examples of how young men managed cancer-related stressors were identified iteratively; theory informed decisions to label examples as "approach-oriented" coping. These procedures were conducted independently and then together to reach consensus. Discrepancies were resolved through systematic discussion, and thematic categories and codes were consistently refined. Coders then independently (and then collectively) examined and assembled coded data to identify themes within categories as well as relationships among them.

Several steps were taken to contribute to the trustworthiness of analyses. Consistent discussion of observations and interpretations helped the research team to remain reflexive during data management and to ground findings in participants' experiences. Consultation with an independent qualitative research expert and maintenance of a detailed audit trail (method of tracking decisions and interpretations of data) facilitated rigorous and transparent data collection and management. Infrequent or outlying cases were included in analysis and examined for unique contributions to the results [25]. Finally, data were also coded for process-related observations, which included instances of self-contradiction or apparent socially desirable responding. These were considered in all phases of interpretation.

### **Results**

Participants described multiple aspects of their cancer experience across the disease trajectory. They discussed the manner in which cancer and its treatment posed challenges to important goals during active treatment as well as during reentry to life activities following physical recovery. For some, cancer treatment necessitated a leave from work or school, delays in building financial and social independence, or barriers to fostering romantic and other relationships. Three interrelated, prominent themes emerged: clarification of values and goals, challenges with engagement and disengagement from relevant goals, and the ability to express and process emotional responses to goal challenges.

#### *Clarifying Goals and Values*

Young men described goal clarification as a transformative experience in which goals became more clear and central to guiding their actions. This 24-year-old (participant 111) survivor describes:

I realized all the potential of things that I could be doing that I wanted to do but hadn't done. I'm finding myself a lot less complacent with just doing the same things. And that may also be because I've been working at a job that

I only kind of care about for 2 years after finishing school.

As this quote illustrates, participants discussed a process of clarification that involved placing value on pre-cancer pursuits. At the same time, they highlighted a new expectation that future goal pursuits should be more substantial, meaningful, and important. This same participant goes on to say:

But I'm finding myself needing to do more—I want to go learn a language or start programming or take classes or go biking and go travel, pick up sports, play my guitar more, build guitars, which I used to do. And I'm—I'm not content to not do as much as I could, or as much as I can.

The process of clarification was continually marked by an internal expectation for high achievement and importance of one's actions and choices, as this 27-year-old (participant 102) survivor explains when asked about his intentions for the future:

Probably not to take life for granted and that I need to live every day to the fullest. And I need to step up and need to do whatever it is that I want to do and not let anybody tell me that I can't. Just because if I would have waited another year I wouldn't be here.... and I am here for a reason and I must be because my life isn't done. And I need to figure out what I am supposed to be doing I guess.

Some young men described a shift in values toward a preference for fun, immediate gratification, and self-focus. Although this was not the dominant process of values clarification, this shift may be worthy of more exploration in future work. It may be marked by a return to more adolescent priorities or may have unique relationships to fear, anxiety, or depression. This 21-year-old (participant 112) young man describes his clarification process:

I could say, like now I'm more about me. I don't know if I could say that I'm more selfish and—my concern's more about me. I've changed dramatically from this whole event to just a totally different person....now it's more like, I'm still close with people, but it's like, I think about myself before I think about anybody else....And, I hate to say that, but to be honest, I'm more like a selfish, cold person now.

### *Disengagement and Reengagement Processes*

Related to reflections of goal and values clarification, young men discussed their experiences of disengaging from goals

that either no longer seemed relevant or, in some cases, goals that were no longer achievable because of cancer. The latter was more often the case for some short-term goals (e.g., graduating from college by age 21) or goals related to fertility. As illustrated in the following quotes, the ability to disengage successfully from irrelevant or unachievable goals and intentionally reengage in realistic meaningful goals was intertwined with feelings of well-being and cancer adjustment. This 27-year-old (participant 120) participant explains disengagement from a set of goals:

Then I definitely wanted to get a job where I was happy. You know, my degree was in communications and advertising, so I wanted to possibly do something in that field once I was done, once I graduated, and then, you know, hopefully buy my first home, or first condo, and, you know, make sure I had that and a successful job, and then hopefully just look forward to getting married and having kids. I am not working for this anymore and that, you know, feels good.

A 25-year-old (participant 116) participant discusses his reluctance to disengage from his goals despite significant changes he has experienced in cognitive and physical function:

You could ask most people that have been through chemotherapy and done all that, and I'm pretty sure they haven't wrote songs like this or been able to come up with stuff like this—because people, like, you lose a lot of your short-term memory. You know, you lose a lot, and it takes a lot out of you, you know what I mean? I didn't know if I was going to make it or not, and it's like, damn, you know—I'll never let go of what I plan. I love it, but I'll do it even if I'm miserable.

In addition to cancer, young adults are quite often negotiating a host of possible avenues of goal pursuit. Some young men discussed some confusion about, or intersection of, challenges to life goals as a result of cancer. A 24-year-old (participant 105) participant discusses his educational and social goals in this regard:

I don't know how much of it pertains to cancer or not—I've been a wreck lately. I applied to seven graduate schools, and I've been rejected from three of them in the last like month. That, on top of really just realizing that the girl that I'm dating back east is kind of a nut job.... And then I just recently got a paper rejected from a journal that I worked a year and a half on, so I've had like a ton of rejection in the past couple of months, and so generally I'm pretty depressed [laughs]. But, you can't just give up.

*Use of Approach-Oriented Coping*

Young men emphasized, and often emphatically endorsed, processes of approach toward general and cancer-related goals and challenges. In addition to discussing the need to “not avoid,” they also discussed remaining actively engaged in steps toward goal achievement, effectively regulating emotions, actively reinterpreting obstacles as opportunities, and working to garner appropriate support to succeed. This active, approach-oriented response to cancer-related demand was sometimes described with a sense of pride, rigidity, and as a determinant of better adjustment. As this 21-year-old (participant 112) participant describes, it was common for young men to respond to goal obstacles with action, perseverance, and utilization of available resources. Goal pursuit was often identified as a marker of quality of life:

I told myself, and I told everybody, this is only a setback for me, it's a roadblock. I'm going right back to school, finishing my EMT—continuing on in the fire service, doing what I want to do and not letting this set me back. But I'm sure there's some people out there who have had this or are going through it that are like, “I can't continue with my dream,” whatever that dream may be. But to me that would be unnecessary—feel what you must but get help from all those that are there to help you out—quality of life after cancer is continuing on with what your goals were before cancer.

Other participants discussed the process of emotional approach—that is, taking time to express their emotions and to identify what they are feeling and process emotional challenges in a variety of ways as a form of coping. This 22-year old (participant 119) says:

I didn't know if I was going to be able to deal with the emotion of it all and handle going through cancer. I told myself there is a reason why I got it, I'm going through this and feel this way. And, I remember I told one of my friends how I was feeling.

Participants also discussed emotional approach as effortful and with potential to tax internal resources. This 27-year old (participant 114) reflects on his abilities to engage with emotion:

I feel like I'm pretty good at kind of expressing my feelings and talking about them—once I'm able to identify them. I take my frustration and anger or whatever out on somebody else. You know, it's easier to take out your frustration or whatever negative feeling you want on someone else—as opposed to, you know, going into yourself and being like, “Oh, maybe this is why I'm

angry,” or, “This is why I'm reacting this way.” I think that's a little bit more of a challenge, identifying where like the root of the emotion is from, rather than just saying what kind of emotion it is.

An active, approach-oriented, and methodical tactic for managing emotional demands was a common emergent theme. This 23-year old (participant 108), when asked about how he managed his fears of cancer recurrence, discussed the importance of remaining task-focused and actively engaged.

I think it's to put things in perspective of what I had to do, not necessarily jumping to any sort of conclusion that I wasn't going to be okay. It was kind of like, here's what has happened, here's the steps, here's my next step, here's what I can do now and just taking 1 h at a time, 1 day at a time, and going through it like that. Not getting too far ahead of myself to where I was completely stressing myself out and not being able to cope or to function.

## Discussion

Findings reveal young men's perceptions that life goals are an important aspect of adapting to testicular cancer. Young men spoke of the importance of goal and value clarification, engagement and disengagement from life goals, and the ability to express and process emotional responses to disrupted goals. Each of these themes represents a potentially critical skill in regulating behavioral and emotional responses to cancer-related stressors and provides insight into the priorities and motivations of these young men.

A preference for action orientation, positivity, achievement, and practical realism emerged across themes. Many young men described the use of an active, approach-oriented approach to pursuing prior goals and/or reengaging with new goals after cancer. As participants readily indicated, these coping efforts can have an impact on quality of life and adjustment. In some cases, approach-oriented coping can have a salutary impact. Some young men described their active coping as effortful and necessary. The use of approach-oriented coping efforts might utilize self-regulating resources and constitute vulnerability when blocked goals are poorly navigated.

To some extent, men viewed goal pursuit and cancer-related coping in competition for individual resources. This conflict, within the context of high expectations for action, positivity, and achievement, provides a self-regulatory framework in which to consider how facility in navigating challenged goal pursuits might support coping efforts and overall adjustment. In a follow-up study, we examined these possibilities in a distinct sample of young men with testicular cancer.

## Study 2

### Method

#### Participants and Procedures

Testicular cancer survivors were recruited with identical methods and eligibility criteria. After informed consent, participants completed questionnaires by mail or in person for which they were compensated \$50. The study was IRB-approved. In total, 171 men aged 18 to 29 years completed questionnaires. This reflects a response rate of 59 % of eligible men approached for participation. Responders did not differ significantly from non-responders on clinical or demographic variables (from registry data). Participant characteristics are displayed in Table 1.

#### Measures

**Goal Navigation** Goal navigation was measured by a five-item goal navigation subscale of the Cancer Assessment for Young Adults-Testicular (CAYA-T) [11]. Participants indicate how often each item (e.g., “I am able to identify goals in my life,” “I know what steps to take to make progress toward my goals”) is true of them over the past 7 days on a three-point response scale ranging from 0 (none of the time) to 2 (much or most of the time). Criterion, construct, and procedural validity are established with this sample [11]. Cronbach’s  $\alpha = .85$ .

**Approach-Oriented Coping** Coping was assessed by the Brief COPE [26] and the emotional approach coping scales [27]. Participants rated their coping behaviors in response to their experience of cancer (1 = *I do not do this at all*; 4 = *I do this a lot*). A composite measure of approach-oriented coping was constructed with subscale items used in previous research [28]: active coping, positive reinterpretation, acceptance, support seeking, emotional expression, and emotional processing. All subscales included in the approach-oriented coping score were positively and significantly correlated with each other ( $r = 0.40$  to  $0.72$ ,  $p < 0.001$ ). The composite scale score represents the mean of included items ( $\alpha = 0.82$ ).

**Cancer-Related Well-Being** Participants completed the emotional, social, and functional well-being subscales of the Functional Assessment of Cancer Therapy General (FACT-G) [29]. The six-item emotional (e.g., “I feel sad”), the seven-item social (e.g., “I feel close to my friends”), and the seven-item functional (e.g., “I am able to enjoy my life”) subscales measure experiences over the past 7 days (0 = not at all; 4 = very much). Higher scores reflect better well-being [29] (emotional  $\alpha = .79$ ; social  $\alpha = .77$ ; functional  $\alpha = .89$ ).

**Table 1** Participant characteristics ( $N = 171$ )

Characteristic	Value
Age (M; SD)	25; 3.3
Ethnicity	
White (non-Hispanic)	46 %
Hispanic/Latino	38 %
Asian	10 %
Native American/Alaskan Native	3 %
African American/Black	1 %
Other	2 %
Education	
Less than high school	5 %
High school/GED	15 %
Some college	32 %
2-year college degree	11 %
4-year college degree	27 %
Graduate degree	10 %
In a committed relationship	44 %
Live with parents	49 %
Have at least one child	19 %
Income	
\$15,000 or less	24 %
\$15,001–\$30,000	20 %
\$30,001–\$45,000	12 %
\$45,001–\$60,000	15 %
\$60,001–\$75,000	11 %
\$75,001–\$100,000	9 %
\$100,001 or more	9 %
Months since diagnosis (M; SD)	32; 19.3
Months since treatment (M; SD)	30; 14.4
Treatment type	
Radical inguinal orchiectomy	73 %
Bilateral orchiectomy <sup>a</sup>	7 %
RPLND	24 %
Chemotherapy	53 %
Radiation therapy	15 %
Other	8 %

RPLND retroperitoneal lymph node dissection

<sup>a</sup> Six cases reported subsequent contralateral tumor

**Health Status and Demographics** Participants self-reported age, level of education, income, employment status, ethnicity, and other sociodemographic variables. They also reported information regarding health history, diagnosis, and treatment factors.

#### Data Analysis

Descriptive statistics and zero-order correlations were computed, as were relationships between dependent variables and potential covariates (i.e., age, income, ethnicity, married/

**Table 2** Pearson correlation coefficients, means, and standard deviations of study variables

	1	2	3	4	5
1. Goal navigation	–				
2. Approach-oriented coping	.29***	–			
3. Social well-being	.36***	.43***	–		
4. Emotional well-being	.44***	.39***	.43***	–	
5. Functional well-being	.42***	.44***	.61***	.60***	–
M (SD)	1.79 (.32)	2.85 (.58)	21.66 (5.58)	17.82 (5.35)	22.01 (6.14)
Range	.29–2.00	1.00–4.00	2.33–28.00	3.60–24.00	3.00–28.00

\*\*\* $p \leq .001$ 

partnered vs. not). Variables significantly correlated with adjustment indicators were included in analyses. In addition, time elapsed since diagnosis was included in statistical models.

Multiple linear regression was used to test hypotheses. In each model, the first block included relevant covariates, the second included goal navigation and approach-oriented coping, and the third block tested the goal navigation  $\times$  approach-oriented coping interaction. Regression analyses were conducted in accordance with Aiken and West [30], and independent variables were mean-centered. For significant interactions, simple slopes analysis was used for interpretation [31] and plotted at  $M \pm 1$  SD. In all cases, the residuals were normally distributed and unrelated to the predicted values, supporting the assumptions underlying regression.

## Results

### Correlations and Identification of Covariates

Table 2 contains bivariate correlations. Goal navigation was positively associated with approach-oriented coping, and they

were significantly, positively associated with indicators of well-being. Notably, goal navigation and approach-oriented coping were negatively associated with income, such that individuals who earned less than \$30,000 annually reported significantly lower goal navigation and approach-oriented coping than those with higher income. Income was positively associated with emotional ( $r = .24, p < .01$ ), social ( $r = .19, p < .05$ ), and functional ( $r = .34, p < .001$ ) well-being. Being single/unpartnered was positively related to social well-being ( $r = .14, p < .05$ ).

### Hypothesis Testing

We examined the relationships of goal navigation and approach-oriented coping scores with each outcome of interest, adjusting for income, partner status, and time since diagnosis (see Table 3). Goal navigation skill was positively associated with emotional ( $B = .35, p < .001$ ), social ( $B = .24, p < .01$ ), and functional ( $B = .28, p < .001$ ) well-being, as was approach-oriented coping ( $B = .22, p < .01$ ;  $B = .32, p < .001$ ;  $B = .26, p < .001$ , respectively). After adjusting for income and time since diagnosis, goal navigation and approach-

**Table 3** Multiple regression analyses testing goal navigation, approach-oriented coping, and the navigation  $\times$  approach interaction predicting physical functioning, depression, and cancer intrusions

Predictor variables	Emotional well-being				Social well-being				Functional well-being			
	$\Delta R^2$	$B$	SE	$\beta$	$\Delta R^2$	$B$	SE	$\beta$	$\Delta R^2$	$B$	SE	$\beta$
Block 1	.06				.06				.12			
Time since diagnosis		<.01	.02	<.01		<.01	.02	<.01		.02	.02	.06
Income		.25	.19	.09		.12	.20	.04		.64	.20	.20**
Unmarried/non-partnered		.01	.73	<.01		1.57	.76	.14*		.27	.76	.02
Block 2	.21				.21				.21			
Goal navigation		5.83	1.23	.35***		4.04	1.26	.24**		5.26	1.26	.28***
Approach-oriented coping		1.99	.67	.22**		3.05	.69	.32***		2.74	.70	.26***
Block 3	.03				.02				.09			
Goal navigation $\times$ approach		-4.32	1.59	-.19**		-3.49	1.63	-.15*		-7.71	1.65	-.30***
	$R^2 = .30, F(6, 161) = 11.22***$				$R^2 = .29, F(5, 159) = 10.63***$				$R^2 = .42; F(6, 163) = 18.55***$			

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

oriented coping accounted for 27 % of the variance in emotional and physical well-being, and 33 % of the variance in functional well-being.

As reported in Table 3, the interaction was significant for all three dependent variables and explained an additional unique 2–9 % of the variance. As displayed in Fig. 1, when approach-oriented coping was relatively high, well-being was high regardless of the level of goal navigation skill. Only those

with low goal navigation ability and low approach-oriented coping had lower levels of well-being. Significant simple slopes emerged for emotional ( $B = .37, p < .001$ ), social ( $B = .44, p < .001$ ), and functional ( $B = .49, p < .001$ ) well-being at low levels of goal navigation. However, for high levels of goal navigation, simple slopes were significant only for social well-being ( $B = .21, p < .05$ ), and not for emotional ( $B = .07, ns$ ) or functional ( $B = .03, ns$ ).

To facilitate interpretation of results of hypothesis tests, analyses were replicated for use of avoidance-oriented coping. Avoidance-oriented coping was negatively associated with emotional ( $B = -.24, p < .01$ ) and functional ( $B = -.21, p < .001$ ) well-being, but not social ( $B = -.09, ns$ ) well-being. However, no significant goal navigation  $\times$  avoidance-oriented coping interactions were observed.

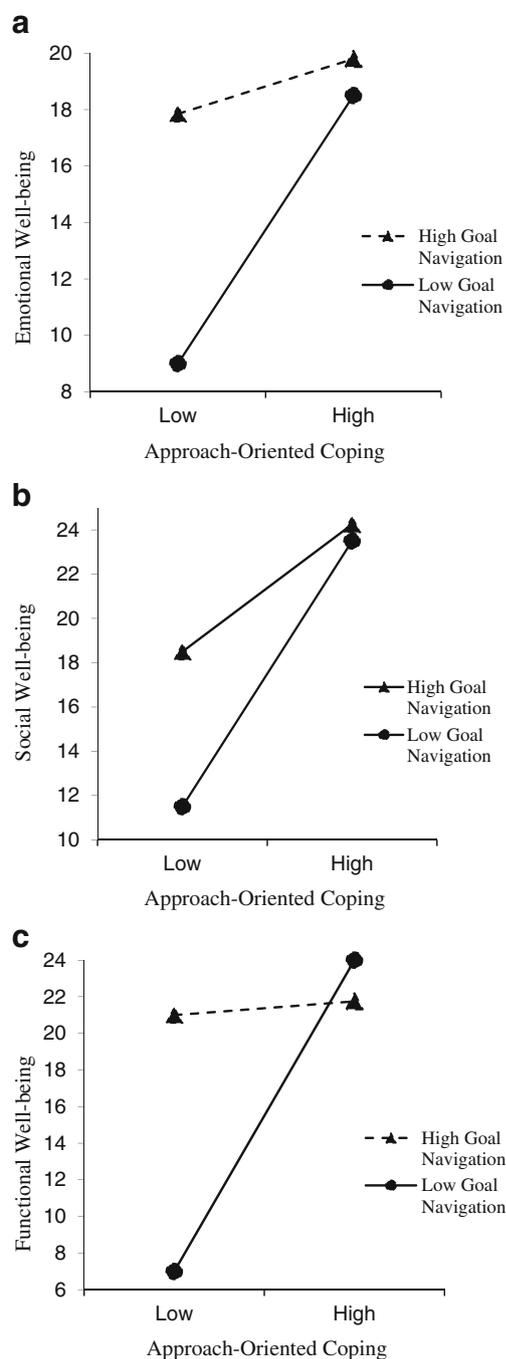
## Discussion

Direct associations of goal navigation and approach-oriented coping with better well-being substantiate qualitative findings from study 1 and establish the adaptive potential for effective goal pursuits. Consistent with hypotheses from a self-regulation perspective, the combination of low goal navigation and low approach-oriented coping is associated with heightened risk for impaired well-being. Results did not support the possibility that the combination of high approach and high goal navigation skill depletes individual resources. In fact, approach-oriented coping efforts appear beneficial whether goal navigation skills are high or low. Results of study 2 suggest that both approach-oriented coping and goal navigation are important factors for self-regulation after cancer.

Although it awaits further research, a potential conclusion from this study is that goal navigation skills can buffer the negative consequences of low approach-oriented coping (and vice versa). Longitudinal and experimental studies are needed to further elucidate these dynamics, though goal navigation and active coping might constitute promising targets of intervention development.

## General Discussion

The present studies examined how goal navigation processes are linked to cancer-related well-being among young adult men with testicular cancer. Although goal processes have been examined in other populations experiencing chronic medical stressors such as HIV-positive men [32], couples facing infertility [33], and adults with cancer [2, 14]; this is the first study to examine goal navigation in the context of young adult cancer survivorship. In study 1, the majority of young men identified goal processes as an important part of their cancer adjustment. They discussed these processes as action-based



**Fig. 1** Goal navigation skill moderating the role of approach-oriented coping on **a** emotional, **b** social, and **c** functional well-being. The dashed line denotes non-significant simple slopes

efforts that included identifying, clarifying, and often actively pursuing important life goals while still attending to the demands of cancer. The observation of some men's reluctance to disengage (even temporarily) from goal pursuits while simultaneously engaging in resource-taxing coping efforts led to questions regarding the impact on adjustment and well-being.

In study 2, goal navigation and approach-oriented coping were independently, significantly, and positively related to well-being. Interaction effects showed that men with lower goal navigation skill who used relatively little approach-oriented coping reported the lowest levels of well-being. Conversely, higher well-being was reported when young men engaged in higher levels of both. Models accounted for 29–42 % of the variance of well-being domains.

Future work to identify potential mechanisms by which goal navigation skills affect psychological or physical health will be important for future translational research. The enhancement of self-regulation is one likely mechanism [34]. The skills involved in adaptive goal pursuit might serve to regulate behavior and internal responses when faced with cancer-related goal blockages. The interaction with approach-oriented coping is potentially consistent with this perspective in that approach-oriented coping might provide additional or unique self-regulating resources that are associated with well-being even years after stressor occurrence.

Multiple regulatory pathways may be implicated. For instance, adaptive goal navigation might provide feedback that ultimately guides behavioral choices to enhance the likelihood of goal progress or achievement [34]. It is also likely that emotion regulation is supported when an individual is better equipped to disengage from goals that are unattainable or delayed. Also, cancer itself might change priorities and values of young adults. An individual who possesses goal navigation skills might be more skillful at integrating these changes through meaning-making efforts and clarification of goals [35] and so better able to disengage from less relevant goals and to identify and engage in new pursuits. Finally, goal navigation skills might influence adjustment via regulation of physiological stress processes [36]. For instance, the ability to disengage from unattainable goals has been associated with more normative patterns of diurnal cortisol in non-clinical samples [e.g., 37].

Findings should be interpreted within the limitations of the studies. Study 1 findings should be considered in context. Men were not observed in naturalistic settings, and observations and conclusions must be interpreted within the frame of the interviewer-interviewee context. Also, the goal of study 1 was not to maximize generalizability, but rather to attain rich descriptions of cancer experiences and relevant processes. Further, in study 1, observations were interpreted through a particular theoretical lens. The use of an alternative theoretical foundation might have led to distinct results. In study 2, self-report measures might be subject to recall error and social

desirability bias. The study was cross-sectional, restricting causal or temporal conclusions. For instance, it is possible that indicators of well-being, goal navigation, and approach-oriented coping are reciprocally related. Future work might examine relationships across meaningful periods in the cancer trajectory, particularly the treatment and reentry phases. Additional research might include patients with various cancer types. This study reflects the experience of young men. It is important to replicate findings in samples of young female cancer survivors. Finally, the measure of goal navigation captured core skills; however, goal-specific skills might also be relevant in this context (e.g., financial planning).

Notwithstanding these limitations, study findings have implications for intervention development. Theoretically driven interventions are needed that instill proficiency in goal navigation and are in alignment with motives salient to young adults. For instance, self-determination theory (SDT) [38] and hope theory [39] have guided promising interventions for health behavior change [e.g., 40] and cancer-related distress [41]. A central component of these approaches is a focus on autonomy, competence, agency, relatedness, and effective goal setting. In that young adulthood is marked by goal pursuits in these domains, cancer-related goal blockages likely threaten these critical motivations and can result in behavioral and emotional dysregulation. Interventions that equip young adults to maintain engagement in goal pursuits that are perceived as self-initiated, that foster personal mastery, and that promote close and intimate relationships might be optimal in assisting young adults in adapting to cancer-related stressors and promoting success in approach-oriented coping.

**Acknowledgments** This research was supported by funds from the Livestrong Foundation and the National Institute of Mental Health (5T32MH015750 and 5T32MH078788). We thank Lisa Rubin, Bennett Allen, and Dulci Pitagora for their contributions to this work.

#### Compliance with Ethical Standards

**Authors' Statement of Conflict of Interest and Adherence to Ethical Standards** Authors' Statement of Conflict of Interest and Adherence to Ethical Standards Authors Hoyt, Gamarel, Saigal, and Stanton declare that they have no conflict of interest. All procedures, including the informed consent process, were conducted in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

#### References

1. Hoyt MA, Stanton AL. Adjustment to chronic illness. In: Baum AS, Revenson TA, Singer JE, eds. *Handbook of Health Psychology*. 2nd ed. New York, NY: Taylor & Francis; 2012: 219-246.

2. Hullman SE, Robb SL, Rand KL. Life goals in patients with cancer: A systematic review of the literature. *Psychooncology*. 2015. doi: 10.1002/pon.3852.
3. Thompson E, Stanton AL, Bower JE. Situational and dispositional goal adjustment in the context of metastatic cancer. *J Pers*. 2013; 81: 441-451.
4. Eiser C, Aura K. Psychological support. In: Bleyer WA, Barr RD, eds. *Cancer in Adolescents and Young Adults*. New York, NY: Springer; 2007: 365-373.
5. Shama W, Lucchetta S. Psychosocial issues of the adolescent cancer patient and the development of the teenage outreach program (TOP). *J Psychosoc Oncol*. 2007; 25: 99-112.
6. Arnett JJ. New horizons in emerging and young adulthood. In: Booth A, Crouter N, eds. *Early Adulthood in a Family Context*. New York, NY: Springer; 2012: 231-244.
7. Wrosch C, Scheier MF, Miller GE, et al. Adaptive self-regulation of unattainable goals: Goal disengagement, goal reengagement, and subjective well-being. *Personal Soc Psychol Bull*. 2003; 29: 1494-1508.
8. Salsman JM, Garcia SF, Yanez B, et al. Physical, emotional, and social health differences between posttreatment young adults with cancer and matched healthy controls. *Cancer*. 2014; 120: 2247-2254.
9. Heckhausen J, Wrosch C, Schulz R. A motivational theory of lifespan development. *Psychol Rev*. 2010; 117: 32.
10. Carver CS, Scheier MF. *Attention and Self-Regulation: A Control-Theory Approach to Human Behavior*. New York, NY: Springer; 1981.
11. Hoyt MA, Cano SJ, Saigal CS, et al. Health-related quality of life in young men with testicular cancer: Validation of the Cancer Assessment for Young Adults (CAYA). *J Cancer Surviv*. 2013; 7: 630-640.
12. Heckhausen J, Wrosch C, Fleeson W. Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychol Aging*. 2001; 16: 400.
13. Wrosch C. Self-regulation of unattainable goals. In: Folkman S, ed. *The Oxford Handbook of Stress, Health, and Coping*. New York, NY: Oxford University Press; 2010: 319-333.
14. Schroevers MJ, Kraaij V, Garnefski N. Cancer patients' experience of positive and negative changes due to the illness: Relationships with psychological well-being, coping, and goal reengagement. *Psychooncology*. 2011; 20: 165-172.
15. Haase CM, Heckhausen J, Wrosch C. Developmental regulation across the life span: Toward a new synthesis. *Dev Psychol*. 2013; 49: 964-972.
16. Arnett JJ. Emerging adulthood: A theory of development from the late teens through the twenties. *Am Psychol*. 2000; 55: 469.
17. Schulenberg JE, Bryant AL, O'Malley PM. Taking hold of some kind of life: How developmental tasks relate to trajectories of well-being during the transition to adulthood. *Dev Psychopathol*. 2004; 16: 1119-1140.
18. Ebata AT, Moos RH. Coping and adjustment in distressed and healthy adolescents. *J Appl Dev Psychol*. 1991; 12: 33-54.
19. Kliewer W. Children's coping with chronic illness. In: Wolchik S, Sandler I, eds. *Handbook of Children's Coping*. New York, NY: Springer; 1997: 275-300.
20. Aldridge AA, Roesch SC. Coping and adjustment in children with cancer: A meta-analytic study. *J Behav Med*. 2000; 30: 115-129.
21. ACS. *Cancer Facts and Figures*. Atlanta, GA: American Cancer Society; 2012.
22. Huang L, Cronin KA, Johnson KA, et al. Improved survival time: What can survival cure models tell us about population-based survival improvements in late-stage colorectal, ovarian, and testicular cancer? *Cancer*. 2008; 112: 2289-2300.
23. Morse J. Designing funded qualitative research. In: Denzin NK, Lincoln YS, eds. *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications; 1994: 220-235.
24. Braun V, Clarke C. Using thematic analysis in psychology. *Qual Res Psychol*. 2006; 3: 77-101.
25. McPherson G, Thome S. Exploiting exceptions to enhance interpretive qualitative health: Insight from a study of cancer communication. *Int J Qual Methods*. 2006; 5: 1-11.
26. Carver CS. You want to measure coping but your protocol's too long: Consider the Brief Cope. *Int J Behav Med*. 1997; 4: 92-100.
27. Stanton AL, Danoff-Burg S, Cameron CL, et al. Emotionally expressive coping predicts psychological and physical adjustment to breast cancer. *J Consult Clin Psychol*. 2000; 68: 875-882.
28. Hoyt MA, Thomas KS, Epstein DR, et al. Coping style and sleep quality in men with cancer. *Ann Behav Med*. 2009; 37: 88-93.
29. Cella DF, Tulsy DS, Gray G. The functional assessment of cancer therapy scale: Development and validation of the general measure. *J Clin Oncol*. 1993; 11: 570-579.
30. Aiken LS, West SG. *Multiple Regression: Testing and Interpreting Interactions*. Newbury Park: Sage Publications; 1991.
31. Preacher K. *A Primer on Interaction Effects in Multiple Linear Regression*. copyrighted manuscript: Chapel Hill, NC; 2003.
32. Kraaij V, Van der Veek SMC, Garnefski N, et al. Coping, goal adjustment, and psychological well-being in HIV-infected men who have sex with men. *AIDS Patient Care STDS*. 2008; 22: 395-402.
33. Thompson EH, Woodward JT, Stanton AL. Dyadic goal appraisal during treatment for infertility: How do different perspectives relate to partners' adjustment? *Int J Behav Med*. 2012; 19: 252-259.
34. Rasmussen HN, Wrosch C, Scheier MF, et al. Self-regulation processes and health: The importance of optimism and goal adjustment. *J Pers*. 2006; 74: 1721-1747.
35. Folkman S. Positive psychological stress and coping with severe stress. *Soc Sci Med*. 1997; 45: 1207-1221.
36. Miller GE, Wrosch C. You've gotta know when to fold 'em: Goal disengagement and systemic inflammation in adolescence. *Psychol Sci*. 2007; 18: 773-777.
37. Wrosch C, Miller GE, Scheier MF, et al. Giving up on unattainable goals: Benefits for health? *Personal Soc Psychol Bull*. 2007; 33: 251-265.
38. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 2000; 55: 68-78.
39. Snyder CR. Hope Theory: Rainbows in the mind. *Psychol Inq*. 2002; 13: 249-275.
40. Jacobs N, Hagger MS, Streukens S, et al. Testing an integrated model of the theory of planned behaviour and self-determination theory for different energy balance-related behaviours and intervention intensities. *Br J Health Psychol*. 2011; 16: 113-134.
41. Thornton LM, Cheavens JS, Heitzman CA, et al. Test of mindfulness and hope components in a psychological intervention for women with cancer recurrence. *J Consult Clin Psychol*. 2014; 82: 1087-1100.