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Adult self-image and well-being after testicular cancer: The role of agency and meaning

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Abstract

Objective: Cancer during young adulthood can limit the extent to which one adopts an adult self-image. However, the relationship of adult self-image to cancer-related adjustment remains unexplored. The current study examines relationships of adult self-image and social/emotional well-being and job-related problems in young testicular cancer survivors. Factors thought to facilitate future-oriented goals (i.e., agency and meaning) are examined as intermediary processes.

Design: Testicular cancer survivors (N=171) between the ages of 18 and 29 completed questionnaire measures of adult self-image, agency, sense of meaning, and indicators of adjustment.

Main Outcome Measures: Social and emotional well-being were measured by the Functional Assessment of Cancer Therapy-General (FACT-G). Job problems were assessed using the EORTC's testicular cancer supplement (EORTC QLQ-TC26).

Results: Path model results revealed direct associations of survivors' adult self-image with social (β=0.20, p<0.05), but not emotional well-being (β=0.14, p<0.01). Both agency and meaning mediated the relationship of adult self-image and well-being indicators. Finally, the relationship between adult self-image and job problems was only significant for those who were employed or in school (β=–0.19, p<0.05).

Outcomes: Assessment of adult self-image might be useful in identifying risk for poor adjustment. Interventions that target agency and meaning might facilitate developmental goals.

Keywords

young adult; adult self-image; cancer; survivorship; job problems

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Lifespan development theories have marked the period between 18 and 29 years of age as a transition into the adoption of an adult self-image (Arnett, 2000; Zebrack & Isaacson, 2012). In fact, young people in this period report feeling caught between adolescence and adulthood (Arnett, 1997). Chronic illness, such as cancer, experienced during this time is associated with diminished social and vocational functioning compared to older survivors

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(Hall et al., 2012). Cancer in young adulthood interrupts the pursuit of developmentally appropriate life goals and this disruption extends to the formation of an adult identity and therefore undermines psychosocial functioning and ability to pursue valued goals (Deimling, Kahana, Bowman, & Schaefer, 2002).

Testicular cancer, the most prevalent cancer among men in late adolescence and early adulthood (American Cancer Society, 2018), has potential to undermine life goals in young adults. Advances in multimodal therapy have yielded survival rates upwards of 90%, which has allowed the development of a research agenda focused on survivorship issues. Thus, young men face both psychological impact from potential loss of a reproductive organ and long-term functional impacts of chemotherapy, radiation therapy, and surgery. These include concerns about body image, relationships, fertility and sexual function, masculinity, and cancer recurrence (Dahl et al., 2005; Rossen et al., 2009). Further, levels of depressive and anxiety symptoms are also higher in testicular cancer survivors than peers without cancer (Butow et al., 2015; Dahl et al., 2005), and this is pronounced for emerging adults.

Adult self-image is associated with engagement with future-oriented goal pursuit (Mayseless & Keren, 2014), which is facilitated by possessing individual agency as well as sense of meaning and purpose in life (Schwartz, Côté, & Arnett, 2005; Winefield, Winefield, Tiggemann, & Goldney, 1991). Socioemotional Selectivity Theory suggests that young adults emphasize future-oriented knowledge and goals (e.g., establishing a career path; forming new and durable interpersonal relationships) in part because they sense a nearly limitless amount of future time (Carstensen, Isaacowitz, & Charles, 1999). Achievement of such long-term goals is effortful and typically involves adopting new and novel roles such as a spouse, parent, or employee. Often pursuit of longer-term goals to not yield immediate rewards, and so goal-related resources such as agency and meaning might protect well-being and maintain engagement in the pursuit of interpersonal and occupational goals.

As described by Erikson (1959) middle adulthood is marked not solely by objective actions (e.g., marriage, employment), but also by the search for social connections, establishment of emotional bonds, and solidification of career identity. Thus, adult self-image is marked by what an adult *is* and not only by what an adult *does*. Notably, social expectations of adult behavior shape adult identity (e.g., adults should be engaged in career pursuits); however, being an adult is, arguably, better indicated by the development of the psychological sense of self-direction and autonomy (e.g., adults are agentic). These responses are more frequently identified among young people in industrialized Western countries as central to being adult than role transitions such as marriage or becoming a parent (Horowitz & Bromnick, 2007).

Agency, or the belief that an individual is in control of one's own life and the consequences of experiences fosters independence and self-directed goals and arguably is a key feature of adulthood. Goal exploration is facilitated by agency, and goals explored during this time reflect an increase in individual volitional actions and aid young adults in differentiating their identities from their peers (Côté, 2002; Schwartz et al., 2005). For instance, those who experience restricted independence due to informal caregiving report having to limit their educational and vocational goal pursuits (Hamilton & Adamson, 2013). Agency also fosters the development of well-being (Kocayörük, Altıntas, & çbay, 2015). Cancer can threaten

young people's sense of control and agency (Munford & Sanders, 2015). Consequently, young adult survivors experience reduced agency as their ability to engage in functional activities becomes limited (Zebrack & Isaacson, 2012). Agency has been linked to better psychosocial functioning in a number of chronic illness groups. For instance, men with prostate cancer who reported more agency are better able to express their emotions and exhibit better functioning and fewer cancer-related problems (Helgeson & Lepore, 2004).

Successful transition into adulthood requires engagement in goals attached to a sense of meaning and purpose (Mayseless & Keren, 2014). Although having a sense that one's life has meaning can been operationalized in a variety of ways, young adults tend to describe it as a "sense of fulfillment" that comes with the pursuit and attainment of worthwhile goals (Reker & Wong, 1988). Young adults select goals that will benefit them in the future, and consequently their experience of hope and sense of meaning are closely related to the goals they select (Feldman & Snyder, 2005; King, Hicks, Krull, & Del Gaiso, 2006). Young adults who have a greater sense of meaning in life and who are committed to meaningful goals demonstrate greater well-being (Dezutter et al., 2014; Sumner, Burrow, & Hill, 2015). For young adult survivors of testicular cancer, sense of meaning is associated with fewer depressive symptoms and greater well-being (Hoyt, Nelson, Darabos, Marín-Chollom, & Stanton, 2016).

The Current Study

The experience of feeling set "off course" or regressed developmentally after cancer is well documented for young adults with cancer (Millar, Patterson, & Desille, 2010; Patterson, McDonald, Zebrack, & Medlow, 2015; Zebrack, Hamilton, & Smith, 2009). This study examines the relationship between testicular cancer survivor's adult self-image and their psychosocial well-being. Although younger age is associated with poorer adjustment after testicular cancer (Dahl et al., 2005), few studies have focused on the young adult period and no study has examined how adult self-image is associated with well-being after cancer.

We identify two important individual resources (i.e., agency and sense of meaning) as hallmarks of young adulthood as potential intermediary processes of these relationships. We hypothesize that testicular cancer survivors' adult self-image will be: (1) positively associated with social and emotional well-being, (2) negatively associated with problems with work/education, and that (3) these relationships will be mediated by agency and sense of meaning.

Methods

Participants

Participants (N=171) between the ages of 18 and 29 (M=25.2, SD=3.32) were recruited from the California Cancer Registry via invitation letter to all men across the state of California with a histologically-confirmed testis cancer between the ages of 18 and 29 as part of a larger study of health-related quality of life in young men with testicular cancer. Individuals with severe psychiatric disorder or cognitive impairment, either physician-confirmed or self-reported, were excluded. In total, 290 individuals received invitations, yielding a

participation rate of 59%. No significant differences in clinical or demographic variables were observed between responders and non-responders.

Participant demographic and medical characteristics are displayed in Table 1.

Procedures

All participants underwent telephone screening to verify eligibility and explain study procedures. Participants were able to complete participation by mail, in person, or by telephone. Following informed consent procedures, participants completed questionnaire measures. Demographic and clinical data were recorded from a combination of Cancer Registry data and self-report. Participants were compensated $50. All procedures were approved by the university Institutional Review Board.

Measures

Adult self-image.—Participants were asked to rate "the extent to which they felt like an adult", using the single Adult Self-Image item from the Cancer Assessment for Young Adults for men with testicular cancer (CAYA-T; Hoyt, Cano, Saigal, & Stanton, 2013). Participants rated this item in reference to the past 7 days using a 3-point scale, (0 = "None of the time"; 3 = "Much or almost all of the time"). This item has been shown to have good face, discriminant, and convergent validity (Hoyt et al., 2013).

Social and emotional well-being.—The Functional Assessment of Cancer Therapy – General (FACT-G) was used to assess participants' cancer-related well-being (Cella et al., 1993). The FACT-G is a validated and frequently used measure of health-related quality of life that measures both symptoms and patient concerns (Luckett et al., 2011). The social and emotional well-being subscales ask participants about their emotions ("I feel sad") and their friend or familial relationships ("I feel close to my friends") with a 5-point Likert scale ranging from "Not at all" to "Very much." Higher scores indicate better well-being. The reliability of the social and emotional subscales was adequate (Cronbach's α = 0.77 and 0.79, respectively).

Job problems.—Participants completed the job problems subscale of the European Organization for Research and Treatment of Cancer Scales Quality of Life Questionnaire– testicular cancer (EORTC QLQ-TC26; Holzner et al, 2013). Responses on the two-item (e.g., "Have you had any problems with your job or your education because of your disease or treatment?") are on a 4-point scale. Responses are combined and transformed to a 0–100 scale according to standard scoring procedures (Holzner et al, 2013) with higher scores indicating greater problems with school and work. Cronbach's α = .79.

Agency.—The Personal Attribute Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1975) was used to assess agency. Agency is computed from eight items rated on a 5-point scale with diametric attributes (e.g., not at all independent vs. independent). Participants were asked to endorse a point on the scale that reflects which attribute best fits them. Discriminant validity has been established for assessing agency via the PAQ (Helgeson & Fritz, 1999). We observed acceptable reliability for the agency subscale (Cronbach's α = .78).

Sense of meaning.—The meaning and purpose subscale of the Functional Assessment of Chronic Illness Therapy Spiritual Well-Being (FACIT-Sp) was used to assess participants' sense of meaning in their lives (Canada, Murphy, Fitchett, Peterman, & Schover, 2008). The meaning subscale consists of four items in reference to the degree to which the participants possess meaning or a sense of purpose in life (e.g., "I have a reason for living"). Responses are on a 5-point scale that range from "Not at all" to "Very much". In this study Cronbach's α = .84.

Data analysis

Descriptive statistics and zero-order correlations were conducted for key study variables. Possible covariates were identified by examining associations between the dependent variables and key demographic factors such as age, education, income, employment status, relationship status, and ethnicity. Time since diagnosis and history of depression or anxiety were also considered as potential covariates. All factors with significant correlations with dependent variables were included as covariates in subsequent analysis.

A single model was developed to investigate potential explanatory factors between testicular cancer survivors' adult self-image and their psychosocial well-being. Robust maximum likelihood estimation using Lisrel Version 8.7 (Jöreskog & Sörbom, 2004) was used to test the proposed models (see Figure 1). Path analysis was used to explore whether agency and meaning explained the relationship between testicular cancer survivors' adult self-image and their social well-being, emotional well-being, and job problems.

The χ^2 statistic, root mean squared error of approximation (RMSEA), standardized root mean squared residual (SRMR), and the comparative fit index (CFI) were computed to evaluate model fit. A model's χ^2 statistic provides a global test of exact fit, with a non-significant χ^2 (i.e. p>0.05) representing acceptable fit and smaller χ^2 indicting increasingly better fit to the data (Bollen, 1989). The RMSEA represents the average size of the residual after adjusting the degrees of freedom, while the SRMR reflects the non-fit of a model. Good model fit exists if both the RMSEA and SRMR are below 0.05; models with fair fit have RMSEA and SRMR values between 0.05 and 0.08 (Hu & Bentler, 1999; Millsap, 2002). The CFI indicates the model fit in comparison to the null model, and is therefore a measure of how much the model is an improvement over the null model. Good model fit is represented by values equal to or greater than 0.95 (Hu & Bentler, 1999; Millsap, 2002).

Results

Descriptive statistics and correlations of key study variables are displayed in Table 2. On average, participants identified feeling like an adult "some or most of the time" (*M*=1.77, *SD*=0.45). They reported similar social (*M*=21.67, *SD*=5.58) and emotional (*M*=17.82, *SD*=5.35) well-being to other samples of testicular cancer survivors between the ages of 15 and 45 (social well-being: *M*=25.50, *SD*=3.47; emotional well-being: *M*=22.91, *SD*=19.15; (Trask, Paterson, Fardig, & Smith, 2003). They also reported a comparable degree of job problems (*M*=20.49, *SD*=29.29) to the scale development sample which included testicular cancer survivors in young and middle adulthood (Holzner et al., 2013). Adult self-image was

significantly correlated with social (r=0.50, p<0.01) and emotional well-being (r=0.34, p<0.01), as well as job problems (r=−0.19, p<0.05)

Bivariate correlations were conducted to test for associations between demographic, clinical (e.g., time since diagnosis, psychiatric history), and dependent variables. Both social and emotional well-being were positively associated with education level (social: r=0.16, p<0.05; emotional: r=0.27, p<0.01), employment (social: r=0.17, p<0.05; emotional: r=0.27, p<0.01), and income (social: r=0.19, p<0.05; emotional: r=0.24, p<0.01), while job problems was negatively associated with these demographic factors (r=−0.29 to −0.31, p<0.001). Conversely, history of an anxiety (r=0.19, p<0.05) or depressive (r=0.25, p<0.01) disorder were positively associated with job problems and negatively associated with social (r=−0.14 to −0.23, p<0.05) and emotional (r=−0.24 to −0.37, p<0.01) well-being. Consequently, models predicting social well-being, emotional well-being, or job problems used education level, employment status, income, history of a depressive disorder, and history of an anxiety disorder as covariates.

The relationships between adult self-image, psychosocial well-being, and covariates were initially explored through individual models without mediators. Consistent with hypothesis 1, testicular cancer survivors' adult self-image was associated with greater social (β=0.47, p<0.01) and emotional (β=0.25, p<0.01) well-being. The relationship between adult self-image and job problems was non-significant (β=−0.08, p=0.32), and consequently excluded from the path model.

Model testing

To test mediation, a path model with adult self-image, proposed intermediary processes (agency and meaning), outcomes (social and emotional well-being), and identified covariates entered simultaneously was examined. The model demonstrated adequate fit to the data: χ^2 (21)= 26.74, p=0.18, RMSEA=0.040, SRMR=0.067, CFI=0.992. See Figure 2.

The model revealed a significant and positive direct effect of adult self-image on social well-being (β=0.20, p <0.05), though the direct effect of adult self-image on emotional well-being only approached significance (β=0.14, p<0.10). Analyses also revealed that adult self-image was positively associated with agency (β=0.62, p<0.01), which in turn was associated with both social (β=0.33, p<0.01) and emotional (β=0.24, p<0.01) well-being. The relationship between adult self-image and meaning (β=0.44, p<0.01) was significant, and meaning was in turn associated with greater social (β=0.18, p<0.01) and emotional (β=0.32, p<0.01) well-being. As hypothesized, the indirect effects of adult self-image on both social (β=0.28, p<0.01) and emotional (β=0.28, p<0.01) well-being through the pathways of agency and meaning were significant.

Post-hoc analysis.

The relationship between adult self-image and job problems was further explored in a *post hoc* multiple linear regression model (Aiken & West, 1991) that examined employment status as a potential moderator of this relationship. It seemed plausible that adult self-image might only be related to occupational and educational problems for those actually engaged in employment or education goal pursuit. Therefore, employment was dichotomized into

unemployed (n=32) versus all other employment statuses (e.g., employed, student, on leave). Results are reported in Table 3. The main effects of adult self-image (β=–0.11, p=0.14) and employment status (β=–0.11, p=0.15) were non-significant. However, probing of the significant adult self-image X employment interaction (β=–0.16, p<0.05) revealed that adult self-image was negatively associated with job problems only for those who were employed or a student (β=–0.19, p<0.05). Adult self-image was not significantly associated with job problems for those were unemployed (β=–0.02, p=0.85). See Figure 3.

Discussion

Adulthood, in part, involves engagement in social and job roles. The current study provides some support for a positive relationship between testicular cancer survivor's adult self-image and their social and emotional well-being as well as job problems. This is the first study to test a model of adult self-image and adjustment to cancer. We found that testicular cancer survivors with a stronger adult self-image report better social and emotional well-being, in part, via the psychological resources of agency and meaning.

The results of this study suggest psychological processes that facilitate future-oriented goal navigation play an important role in how perceptions of adult identity may impact well-being. Consequently, entry into adulthood might be best framed in terms of the development of future-oriented goal processes such as agency and meaning rather than discrete roles (e.g., job role, relationship status). Although this study relied on observations at a single time, these processes might underlie how the perception of adulthood could influence well-being and overall functioning over time.

We anticipated that adult self-image would be related to successful engagement in job-related goals. Yet, counter to our hypothesis, the relationship between adult self-image and job problems was not significant. However, additional analyses revealed the relationship between adult identity and job problems was present for individuals who are employed or in school. The EORTC QLQ-TC26 asks about current job problems directly resulting from cancer, and so it is possible that participants who were unemployed likely reported few current problems. It may be, of course, that a portion of unemployed participants experienced cancer-related job problems in the past, while others might view unemployment as a welcomed opportunity for identity exploration.

The processes of agency and meaning might be potential intervention targets for assisting young adults whose pursuit of future-oriented goals were disrupted by cancer. Outside of career counseling in high school or college, there are few formal mechanisms to promote re-engagement with future-oriented goals, leaving some young adult survivors without direction while their peers engage in activities that ease their transition into middle adulthood. Our assessment of participants' adult self-image measured their experience retroactively over a 7-day period, limiting conclusions about the impact of cancer on the formation of adult self-image. To aid the development of an intervention, future research should explore how cancer impacts adult self-image through the use of a prospective, longitudinal design with a matched cohort of healthy men.

This study focused on a cancer that is exclusive to men, and the results may not generalize to women survivors of cancer. Socioemotional Selectivity Theory frames future-oriented goals that are relevant to both genders, and women follow a similar pathway into adulthood by transitioning into occupational and family roles. However, women are more likely to enter these roles earlier in life and while under greater social pressure (Oesterle, David Hawkins, Hill, & Bailey, 2010). This may result in greater sensitivity to the disruption of future oriented goals should the cancer occur before entering these roles. Women are also socialized to place a greater emphasis on relationships rather than independence and they are more likely to describe themselves with communal rather than agentic traits (Diehl, Owen, & Youngblade, 2004). Processes such as communion may be important for the pursuit of future oriented goal pursuit for woman.

The processes identified in this study (i.e., agency and sense of meaning) may also be specific to testicular cancer, which has a very favorable (96%) 5-year relative survival rate (Siegel et al., 2012). Survivors of cancers with higher mortality rates may experience a shift from future to present oriented goals, which emphasize immediate rewards and benefits. As a result, these goals may be facilitated by psychosocial processes such as coping style or social connectedness rather than those identified in the current study.

Finally, the data was cross-sectional in nature which prevents true tests of mediation and causal interpretations from being inferred. Future research should implement a longitudinal design to study how one's adult self-image is related to changes in psychosocial well-being. While cancer presents a serious health issue, it might also direct young adults towards activities that could promote a sense of being an adult rather than disrupt the pursuit of future-oriented goals. For example, young men may take more responsibility in managing their health care, a task traditionally associated with adulthood.

Society anticipates the transition into middle adulthood will happen as individuals enter into roles associated with adulthood. For cancer survivors, this is the first study to demonstrate how their adult self-image is related to their well-being. Our findings point to the psychological processes related to future goal pursuit, regardless of whether they have engaged with roles such as spouse, father, or employee. If cancer halts or diverts these processes, young men may find themselves unable to successfully navigate towards adulthood and experiencing greater functional well-being as they grow older.

Acknowledgments

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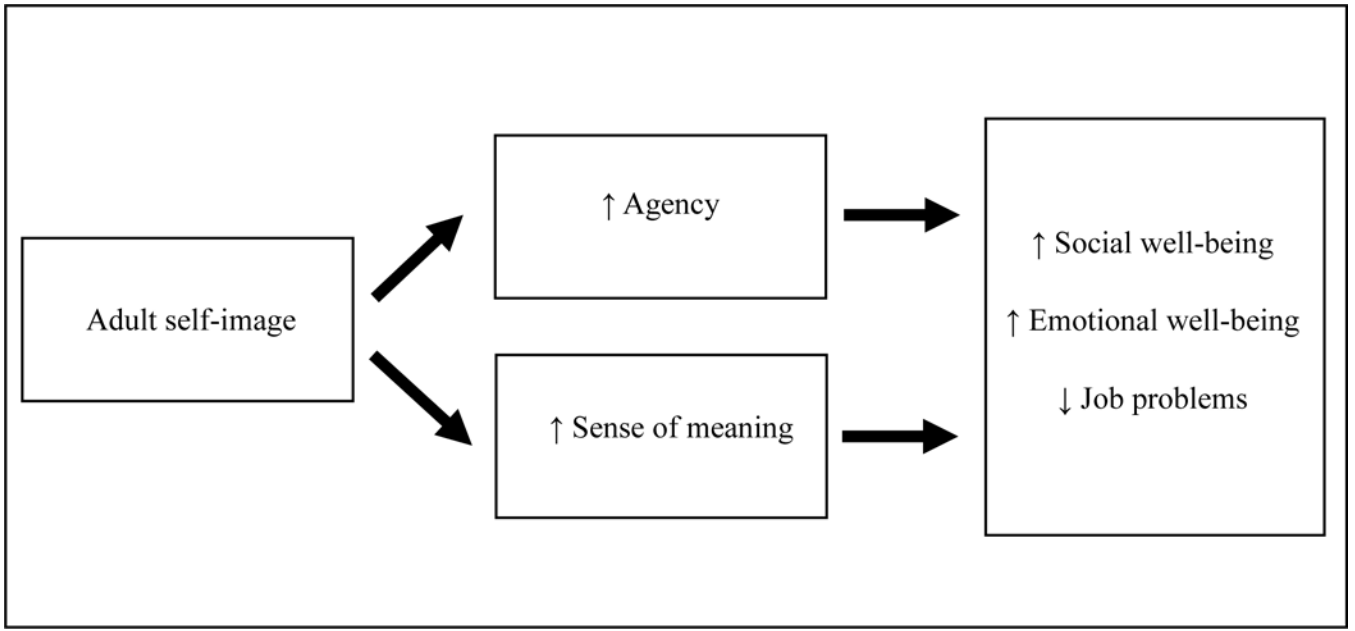
Figure 1.
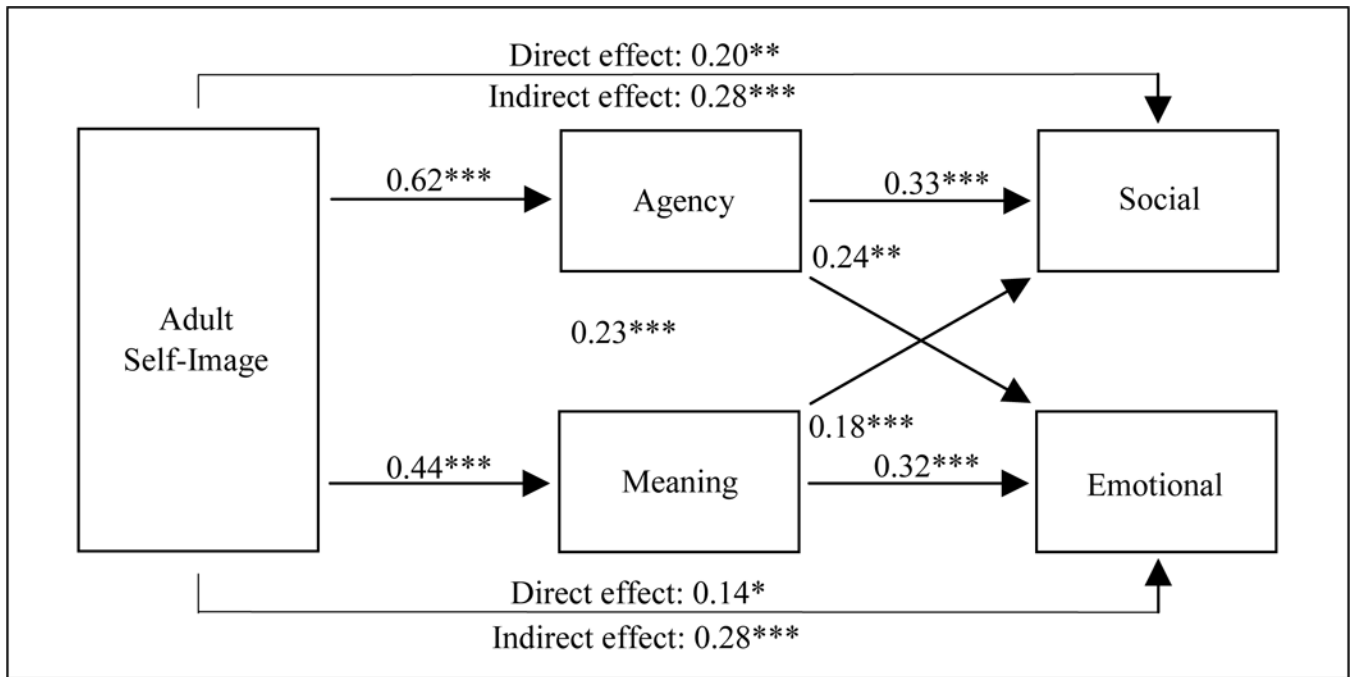Relationship between adult self-image and social, emotional, and job outcomes

Figure 2.
Path diagram showing relationship between adult self-image, agency, meaning, and well-being. *p<0.10, ** p<0.05, *** p<0.01
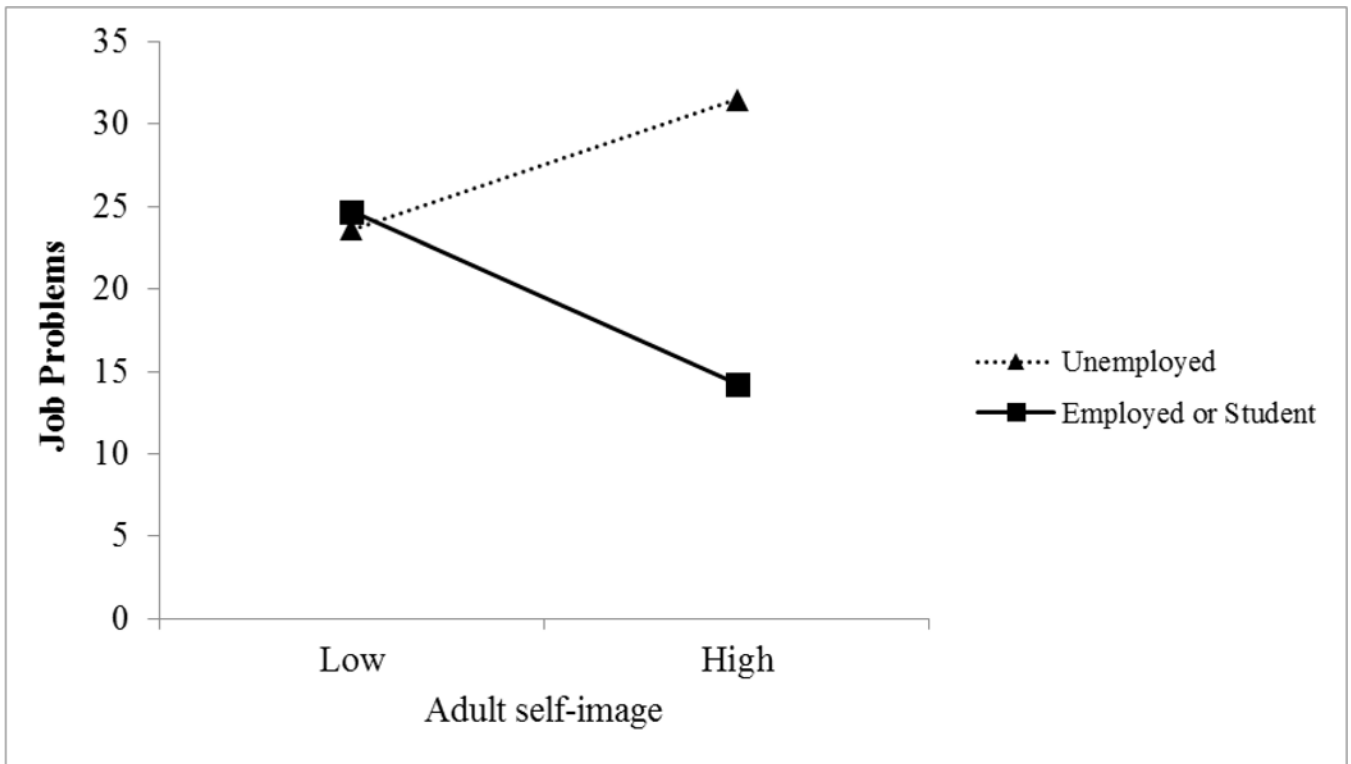
Figure 3.
Adult self-image and employment status on job problems for young male testicular cancer survivors. *Note:* Dashed lines indicates non-significant simple slope.

Table 1.

Demographic characteristics of the sample, testicular cancer (N=171)

Variable	N (%)	M (SD)	Range
Age		25.2 (3.3)	18–29
Race/ethnicity			
White	77 (45.0)		
Hispanic/Latino	59 (34.5)		
Asian	10 (5.8)		
Native American/Alaskan	1 (0.6)		
African American	1 (0.6)		
Other/Mixed	23 (13.5)		
Education			
Some high school	8 (4.7)		
High school/GED	26 (15.2)		
Some college	55 (32.2)		
2-year college degree	19 (11.1)		
4-year college degree	47 (27.4)		
Graduate degree	16 (9.4)		
Annual Income			
$15,000	41 (24.1)		
$15,001-$30,000	33 (19.4)		
$30,001-$45,000	20 (11.8)		
$45,001-$60,000	26 (15.3)		
$60,001-$75,000	19 (11.2		
$75,001-$100,000	16 (9.4)		
> $100,000	15 (8.8)		
Employment status			
Full-time employment	70 (40.9)		
Part-time employment	39 (22.8)		
Student	21 (12.3)		
Medical Leave/Disability	9 (5.3)		
Unemployed	32 (18.7)		
Stage			
Stage I	58 (33.9)		
Stage II	31 (18.1)		
Stage III	22 (12.9)		
Unknown	60 (35.1)		
Treatment			
Surgery	137 (80.1)		
Chemotherapy	91 (53.2)		
History of depression	22 (12.9)		
Months since diagnosis		32.3 (19.3)	

Table 2.

Descriptive statistics and correlations for study variables

Variable	Mean	SD	1	2	3	4	5
Predictor							
1 Adult self-image	1.77	0.46	-				
Mediators							
2 Agency	29.31	5.34	0.40[**]	-			
3 Sense of meaning	32.62	6.67	0.54[**]	0.65[**]	-		
Outcomes							
4 Social well-being	21.67	5.58	0.50[**]	0.45[**]	0.64[**]	-	
5 Emotional well-being	17.82	5.35	0.34[**]	0.51[**]	0.64[**]	0.44[**]	-
6 Job problems	20.49	29.29	–0.19[*]	–0.31[**]	–0.50[**]	–0.57[**]	–0.53[**]

[*]
$p < .05$

[**]
$p < .05$

[***]
$p < .001$

Table 3.

Job problems regressed on to adult self-image and employment status

Variable	R²	B	SE	β
Job Problems				
Block 1	**0.17**[***]			
Education		−3.57	2.08	**−0.20**[*]
Income		−2.28	1.19	−0.15
History of Depression		12.54	9.42	0.14
History of Anxiety		5.02	10.43	0.05
Block 2	0.01			
Adult Self-image		−7.33	4.98	−0.11
Employment		−7.89	5.40	−0.11
Block 3	**0.02**[*]			
Adult Self-image X Employment		−20.05	9.70	**−0.16**[*]
	$F_{(7, 160)} = 6.01$[***], $R^2 = 0.20$			

[*]
$p < .05$

[**]
$p < .05$

[***]
$p < .001$