Self-Identified Goals of Adolescents With Cancer and Healthy Peers: Content, Appraisals, and Correlates

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Objective Compare the content, future orientation, and appraisals of self-identified goals of adolescents with cancer and control subjects. Identify correlates of health-related and future-oriented goals of adolescents with cancer.

Methods Adolescents with cancer (n = 102) and control subjects (n = 97) self-identified goals, rated appraisals of goals, and completed psychosocial measures.

Results Adolescents with cancer identified fewer goals, were more likely to identify a health-related goal, less likely to identify an intrapersonal or leisure goal, and rated their goals as more achievable and supported compared with control subjects. For adolescents with cancer, female gender predicted having a health-related goal. Additionally, age and parent-reported adolescent quality of life predicted having a future-oriented goal. 63 percent of adolescents with cancer reported establishing at least one goal because of cancer.

Conclusions Despite similarities between groups, evidence supports that adolescents with cancer made changes to their repertoire of goals, suggesting the need to balance various priorities.

Key words adolescents; cancer; future orientation; goals.

For adolescents undergoing treatment for cancer, intensive treatments, prolonged hospital admissions, frequent clinic visits, altered physical appearance or vitality, and pain, fatigue, and nausea may be disruptive to normal development and emerging goal setting and pursuit (Schwartz, Kazak, & Mougianis, 2009). It is unknown how a diagnosis of cancer impacts adolescent goals. Given ~75% of adolescents with cancer will survive at least 5 years (National Cancer Institute, & Livestrong, 2006), examining their goals is important for understanding their priorities and facilitating optimal quality of life (QOL) and transition to adulthood.

Goals are internal representations of desired states (Austin & Vancouver, 1996). Goals typical of adolescence include social goals related to family, friends, and romantic partners; academic and occupational goals; and those related to leisure (Nurmi, 1989, 1991; Roisman, Masten, Coatsworth, & Tellegen, 2004). Personal goals may also represent developmental tasks—milestones that are relevant to a specific developmental period. Adolescence is a particularly important period for goal formation, as individuals begin to explore possibilities for the future (Arnett, 2000). Such goal setting and pursuit is critical for successful transition to adulthood and related well-being during a psychologically challenging time (Emmons, 1991; Nurmi, 1993; Salmela-Aro & Nurmi, 1997; Schwartz & Drotar, 2006). Goal setting is also critical for managing health in that personal goals can provide motivation to engage in health promoting behaviors, and health-related goals help focus priorities in the context of compromised health (Bandura, 2004; Maes & Karoly, 2003).

Goal theories suggest that current life context (e.g., a new illness), developmental status (e.g., adolescence), and culture impact the content of goals and how they are prioritized, changed, and pursued during a particular stage of life (Little, Salmela-Aro, & Phillips, 2007;
Nurmi, 1991; Schwartz & Drotar, 2006). A model based on empirical findings on the role of goals in adaptation to pediatric chronic illness also purports that specific disease and treatment factors, demographics, and relational factors between patients and parents also impact goal processes (Schwartz & Drotar, 2006). The pediatric model also emphasizes that incorporating new disease management goals into a repertoire of developmentally normative goals is important for managing a chronic illness and for disease adaptation (Schwartz & Drotar, 2006).

Thus, a cancer diagnosis in adolescence may influence aspects of the goal-setting process of adolescents, such as the content of and ways in which they think about their goals (i.e., appraisals). Alternatively, because of the focus on new goal setting and pursuit in adolescence, and the desire to “be normal” and “fit in” that is typical of adolescence, goals and related appraisals of adolescents with cancer may be relatively similar to that of their peers. This could place goals for normalcy at odds with disease management goals, whether established by patients, parents, or providers. Therefore, there is a need to better understand the nature of goals of adolescents with cancer, as goals are an important focus of intervention, while also providing important descriptive information on priorities and individual differences of such adolescents with a life-threatening illness.

Despite the potential importance of goals for well-being and disease management, and the potential for goals and related appraisals to change in the context of a chronic illness, no study has explored the goals of adolescents with cancer, and few have explored goals of other pediatric populations. Two studies—one examining young adults’ self-identified goals and the other assessing adolescents’ goals—identified similar goal content across participants with health conditions and control subjects; thus, indicating that adolescents and young adults are focused on maintaining developmentally typical goals regardless of health status (Helgeson & Takeda, 2009; Schwartz & Drotar, 2009). However, adolescents with diabetes were more likely to identify appearance projects, and healthy adolescents were more likely to identify self-improvement projects (Helgeson & Takeda, 2009). Another study found that adolescents with diabetes indicated close friendship and peer group integration, autonomy from parents, occupational competence, and romantic relationships as developmental tasks of greatest importance. Significant correlations between adolescents with diabetes and comparison groups on perceived and aspired developmental status suggest that adolescents with diabetes share the same aspirations as their healthy peers (Seiffge-Krenke, 1998).

The present study extended the previous few on personal goals in youth with a chronic illness by assessing a broad range of goal-related variables and focusing specifically on adolescents undergoing active treatment for cancer—a life-threatening disease that relates to significant physical and emotional vulnerability during a developmental period of increased independence and goal setting. Knowing the goals prioritized by adolescents, especially goals related to health and their future, and how one thinks about their goals, provides valuable information to promote disease management, transition to adulthood, and overall well-being. Specific aims were to compare the content, future orientation, and appraisals (e.g., difficulty, self-efficacy, support) of personal self-identified goals of adolescents with cancer to healthy control subjects and to identify correlates of health and future-oriented goals. Both groups were expected to report similar goal content and endorse having more academic, job/occupational, leisure, and interpersonal goals than the other content categories (Nurmi, 1989, 1991; Roisman et al., 2004; Schwartz & Drotar, 2009), with the exception that adolescents with cancer would report more health-related goals (Schwartz & Drotar, 2009; Seiffge-Krenke, 1998). Furthermore, it was expected that adolescents would report similar support for their goals, and support needed to achieve their goals, but that those with cancer would report their goals as more difficult and less achievable (Schwartz & Drotar, 2009). For the cancer group only, the study described the number of and types of goals that emerged because of cancer. Based on the Schwartz & Drotar (2006) model, potential correlates (i.e., well-being, and patient demographic, disease-related, and familial variables) of health-related and future-oriented goals—both theoretically important for disease management and adaptation—were also examined.

**Methods**

**Participants**

Adolescents with cancer (n = 102) and healthy control subjects (n = 97) completed the study. Eligible adolescents were aged 13–19 years, English-speaking and had an English-speaking caregiver, and were cognitively capable to participate per report of a member of the medical team or parent. Participants with cancer were eligible if they were undergoing cancer treatment (not palliative care), at least 1 month since diagnosis, and physically capable of participating per parent or medical team member report. Of 133 potential participants with cancer approached, 123 agreed to participate, and 102 completed the study. Reasons for refusal included too much work.
(n = 2), child did not feel well (n = 1), parents did not want the child to participate (n = 4), child had cognitive limitations (n = 1), or no reason given (n = 2). There were no differences between those who agreed and those who refused to participate or between those who withdrew and those who completed, in age, gender, or minority status. Diagnoses included leukemia (n = 30, 29%), lymphoma (n = 20, 19%), brain tumor (n = 11, 11%), and solid tumor (n = 41, 40%). Average time since first cancer diagnosis was 20.44 months (SD = 38.59; range = 1–193), and 28 (27%) had a relapse. Mean days spent on the inpatient floor since the start of treatment for the current cancer diagnosis was 37.94 (SD = 38.86; range = 0–200), and mean days outpatient was 21.48 (SD = 24.11; range = 0–118). According to provider-reported ratings of treatment intensity, 21 (21%) of the adolescents had treatments that were mild to moderate, 45 (44%) were very intense, and 36 (35%) were most intense.

Control participants were ineligible, as assessed by self- or parent-report, if they ever had a chronic health condition, a life-threatening illness, or acute problem requiring hospitalization, or if they had an immediate family member (e.g., sibling, parent, or child) with a cancer diagnosis. Of 128 control participants, 114 were eligible and agreed to participate, and 97 completed the study. See Table I for demographics and disease information.

### Procedures

Potential participants with cancer were identified through daily clinic and in-patient rosters and approached by a study member in clinic or on the in-patient floor. Participants with cancer recruited in clinic (n = 38) versus those recruited on the inpatient floor (n = 64) did not differ on number of goals, goal content, or appraisals of goals. Control subjects were recruited through flyers advertising the study in an office building associated with the hospital or through a snowball recruitment strategy (Biernacki & Waldorf, 1981), whereby adolescents from the cancer group were asked to distribute flyers about the study with investigator contact information. Participation was initiated for healthy adolescents that contacted the primary investigator and were eligible. Healthy adolescents that opted-in were also asked to distribute information about the study. Among those that completed the study, 32 (33%) were referred by adolescents with cancer, 33 (34%) were referred by other control participants, and 32 (33%) opted-in after seeing the flyer. Scores on dependent variables did not differ by referral method for the control participants. Following consent (parent and adolescents aged 18 and 19 years) and assent (adolescents aged <18 years), adolescent/parent dyads were given a packet of questionnaires to complete and return in person or by mail. Adolescents were compensated $25. This study was approved by the hospital’s institutional review board.

### Measures

#### Demographics and Disease/Treatment Information

Parents provided information about the child’s demographics (age, income, gender, ethnic/racial identity). Chart abstractions were used to identify disease and treatment variables to describe the participants and to examine correlates of health-related and future-oriented goals (diagnosis, time since diagnosis, relapse, days in-patient and out-patient, treatment intensity). The Intensity of Treatment Rating Form (Werba et al., 2007)—a well-validated rating system—was used to record treatment intensity on a scale of 1–4. Relevant information was abstracted for the form, and two providers independently completed the ratings. A third pediatric oncologist reviewed and determined 10 ratings that were either discrepant or in need of verification.

#### Psychosocial Correlates of Goals

**Family Assessment Device.** The 12-item General Functioning Scale of the Family Assessment Device (Epstein, Baldwin, & Bishop, 1983) was used and has
been established as a stand-alone brief measure of family functioning (Byles, Byrne, Boyle, & Offord, 1988). Adolescents and parents rated their agreement with statements describing families on a 4-point scale, with higher scores indicating worse functioning. Internal consistency for adolescent-report (α = .85) and parent-report (α = .88) was good.

**Parental Bonding Index.** The 25-item Parental Bonding Index (Parker, Tupling, & Brown, 1979) was completed by adolescents (referring to their primary caregiver) and parents (referring to themselves) to assess parental caring (e.g., warmth, understanding) and overprotection (e.g., intrusive, controlling). Respondents rated items on a 4-point scale from very like to very unlike. Internal consistency was good for caring (adolescent-report: α = .85, .90; parent-report α = .79) and overprotection (adolescent-report: α = .79, .81; parent-report α = .73).

**Perceived Social Support—Family Scale.** Adolescents completed the 20-item Perceived Social Support—Family Scale (Procidano & Heller, 1983). Adolescents responded with yes, no, or don’t know to feelings or experiences related to familial support. The number of responses indicating familial support were summed. Internal consistency was good (α = .86).

**PedsQL.** The general module of the PedsQL (Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002; Varni, Seid, & Rode, 1999) measured parent and adolescent-report of adolescent QOL. Adolescents and parents rated the frequency of adolescent problems with physical, emotional, social, and school functioning on a 5-point scale. Items are reverse-scored and standardized, resulting in a total score ranging from 0 to 100, with higher scores indicating higher QOL. Internal consistencies for parent-reported adolescent QOL (α = .91), and for adolescent self-reported QOL (α = .92) were excellent in this sample.

**Positive and Negative Affect Scale.** The Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988) assessed positive and negative affect. Adolescents rated how much they experienced 20 feelings in the past week on a 5-point scale, with higher scores corresponding to higher affect. Internal consistency was good for positive (α = .89) and negative (α = .90) affect.

**Dependent Measure**

**Health-Related Hindrance Inventory.** The Health-Related Hindrance Inventory (HRHI) assesses self-identified goals, ratings of appraisals of the goals, and ratings of the impact of health on those goals (known as health-related hindrance) of adolescents and young adults with various health conditions (Schwartz & Drotar, 2009; Schwartz, Kazak, Radcliffe, Barakat, & Straton, 2006). The current study focused on goal content and appraisals. The HRHI was adapted from the Personal Projects Analysis (Little, 1983, 2011) a methodology to assess personal goals and appraisals of them. The HRHI provides a definition¹ and examples² of adolescent goals and then instructs respondents to list their own personal goals and provide ratings of up to 10 self-identified important goals. Ratings used in this study included importance of (α = .80), difficulty of (α = .77), self-efficacy to achieve (α = .68), support needed to achieve (α = .73), and how much support they have to achieve each goal (α = .79) on a 7-point scale. Adolescents with cancer also endorsed whether or not they would have the goal if they did not have cancer.

**Coding Procedure.** To code the content of the self-identified goals, a coding scheme that was originally used in research with the Personal Projects Analysis was modified for use with adolescents (Chambers, 2003; Little & Chambers, 2004; Schwartz & Drotar, 2009). The authors reviewed the applicability of the original coding scheme to adolescent goals reported in the current sample, and they also reviewed studies on adolescent goals (Arnett, 2000; Nurmi, 1989, 1993; Nurmi & Salmela-Aro, 2002; Salmela-Aro, Aunola, & Nurmi, 2007; Schulenberg, Bryant, & O’Malley, 2004). The resulting goal content areas and definitions are presented in Table II (A more detailed code book is available from the authors on request). Additionally, goals were coded as to whether they reflected a future orientation. Such goals represented aspirations and plans of adolescents that extended beyond high school and adolescence and that, for those with

¹“Goals may be plans, tasks, projects, or activities that you do to achieve something you want. Goals can relate to any part of your life (school, work, health, fun, friends, family, you, etc.). They can be short term (see a movie this weekend) or long-term (go to a good college), easy (practice pitching) or difficult (win all of our games), chosen by you (have more fun) or others (clean my room), relate to you (be more confident) or others (get along better with my best friend), and focus on achievement (graduating) or process (enjoy a day with my friends).”

²Examples provided: improve my math grade, change my hair color, practice the piano more, graduate high school, do applications, get a gift for my friend’s birthday, spend more time with my family, run more, get into a good college, be nicer to my brother, call my friends more, work on my bike, get a girlfriend, be a doctor, help my mom paint the kitchen, feel good about the way I look, get more sleep.
cancer, implied an expectation to manage and/or survive cancer during the transition to adulthood and beyond. Examples included do well on SATs, apply for college, and start a family. A goal, such as getting a job, was not considered to be future-oriented because adolescents can obtain part-time employment at any time. Each goal was independently rated by the two authors for content (1 of 9 categories) and for future orientation (yes/no). Thus, each goal received two codes, resulting in 2,826 total codes. Agreement between the two raters was 98.12%; all

### Table II. Group Differences on Goal Content (N = 199)

<table>
<thead>
<tr>
<th>Goal category/description</th>
<th>Examples</th>
<th>Cancer (n = 102)</th>
<th>Control subjects (n = 97)</th>
<th>p</th>
</tr>
</thead>
</table>
| **Academic:** school-related goals; activities specifying graduation, grades, and homework [M (SD)] | • Get into college  
• Get on honor roll  
• Finish my homework | 29.70 (21.03) | 28.52 (17.82) | ns    |
| **Job/occupational:** job-related goals | • Become a doctor  
• Apply for a job | 48% | 54% | ns |
| **Health:** goals relating to general health, or disease prevention, or management | • Eat better  
• Run more  
• Get out of hospital | 62% | 46% | .03 |
| **Body/appearance:** purposefully changing one’s body; altering appearance | • Lose weight  
• Change my hair color  
• Get ears pierced | 20% | 23% | ns |
| **Interpersonal:** dealing with others on a personal level; communicating or interacting with friends, family, and romantic partners | • Spend more time with my brother  
• Go shopping with my friends  
• Go on a date  
• Be a role model | 56% | 62% | ns |
| **Intrapersonal:** pursuing self-improvement of mind, body, or spirituality (psychological as opposed to physical); attitudes and values related only to the self | • Be nicer  
• Have more self-confident  
• Live life to the fullest  
• Stop worrying  
• Move out of my parent’s house | 22% | 44% | .00 |
| **Leisure:** activities done for pleasure (e.g., sports, shopping, hobbies) | • Join softball team  
• Travel the world  
• Get my license | 69% | 86% | .01 |
| **Religion:** demonstrating religious faith/affiliations; serving the church | • Go to Church  
• Pray more  
• Go on a missionary trip | 9% | 14% | ns |
| **Administrative/maintenance:** daily chores; upkeep of houses, cars, pets, finances | • Stop procrastinating  
• Clean my room  
• Save my money | 15% | 25% | ns |
| **Future goals:** could include any of the above goals that indicate plans for future beyond adolescence, and/or expectation to reach a stage of emerging adulthood and beyond | • Go to college  
• Start a family  
• Graduate from high school  
• Become a teacher  
• Move out of my parent’s house | 70% | 74% | ns |

*For academic goals, groups were compared on mean percent of academic goals identified of total number of goals identified. 
ns = not significant.
discrepancies were easily resolved through review and discussion among the coders.

Data Analysis Plan

Descriptive statistics were provided on disease, demographic, and goal variables. T-tests (for continuous variables) and $\chi^2$ (for dichotomous variables) analyses compared groups on demographics and goal-related variables. For those with cancer, demographic, disease/treatment, and psychosocial associates of having a health-related and future-oriented goal were examined through t-tests and $\chi^2$ analyses. Two binary logistic regressions were then used to test multivariate models of associates of having a health-related and future-oriented goal. A p-value of <.05 was used as the threshold for significance.

Results

Goal Content

Table II describes goal content variables. The ratings of importance of goals were high ($M=5.17$ of 6.00), indicating that goal assessment methods were eliciting meaningful goals. All goal content categories except academic goals were positively skewed with a mode of zero. Thus, to facilitate analyses, all goal content categories except academic goals were dichotomized to reflect the presence or absence of that type of goal for each participant.

As expected, academic, leisure, and interpersonal were the most frequently reported goal content categories for both groups, followed by health and job/occupational goals. The average number of goals reported by the adolescents with cancer was 6.54 ($SD=2.72$) and 7.95 ($SD=2.69$) for the control group [t(196) = 3.66, p < .00]. Group differences on goal content were assessed through a t-test for academic goals (mean percentage of all other content categories) and $\chi^2$ (group by number of participants who reported a goal in the particular content area) for all other content categories. The number of participants who reported having a certain type of goal differed significantly between groups on intrapersonal goals [$\chi^2(1, \ N=199) = 4.74, \ p < .00$], leisure goals [$\chi^2(1, \ N=199) = 8.03, \ p < .01$], and health-related goals [$\chi^2(1, \ N=199) = 4.74, \ p < .03$], with more participants in the control group reporting intrapersonal and leisure goals and lesser health goals.

Goal Appraisals

There were no significant differences between adolescents with cancer and the control group on support needed to achieve goals [cancer: $M=3.55, \ SD=1.11$; control subjects: $M=3.25, \ SD=1.23$; t(197) = −1.82, not significant] and on difficulty of goals [cancer: $M=3.67, \ SD=1.13$; control: $M=3.73, \ SD=1.03$; t(197) = 0.40, not significant]. However, the cancer group reported higher self-efficacy to achieve goals [cancer: $M=4.90, \ SD=0.82$; control subjects: $M=4.50, \ SD=0.65$; t(197) = −3.83, p < .00], and had more support to achieve them [cancer: $M=4.00, \ SD=1.40$; control: $M=3.19, \ SD=1.29$; t(197) = −4.31, p < .00] relative to the control group.

Goals Established Because of Cancer

Sixty-four (63%) adolescents with cancer reported having at least one goal they would not have if they did not have cancer; 24% of total goals fell into this category. Of those that identified having a new goal because of cancer, 61% reported a new disease management goal (a subcategory of health-related goals), 27% reported a new academic goal, 23% reported a new leisure goal, 19% reported a new health-promotion goal (a subcategory of health-related goals), 19% reported a new body/appearance goal, 16% reported a new interpersonal goal, 13% reported a new work/occupational goal, 11% reported a new intrapersonal goal, 3% identified a new religion goal, and 3% reported a new administration/maintenance goal.

Associates of Health-Related and Future-Oriented Goals for Adolescents With Cancer

In terms of associates of having a health-related goal among the adolescents with cancer, 70% of non-Hispanic Whites identified at least one health-related goal compared with 45% of minorities ($\chi^2 = 5.50, \ p < .02$), and females (80%) were more likely to identify a health-related goal than males (48%; $\chi^2 = 10.36, \ p < .00$). Results from t-tests revealed that identifying a health-related goal was associated with a more caring primary caregiver per adolescent-[t(65.78) = −3.14, p < .00] and parent-report [t(61.24) = −2.19, p < .03], better adolescent-reported family functioning [t(100) = 2.13, p < .04], and more social support from family [t(100) = −2.93, p < .00]. A multivariate model of health-related goals, entering the significantly associated variables, was significant ($\chi^2 = 22.24; \ p < .00$; see Table III), but the only significant predictor was female gender ($\beta = 1.35; \ p < .01$).

Having a future-oriented goal related to higher age [t(100) = −4.40, p < .00], higher parent- [t(83.54) = −3.53, p < .00] and adolescent-reported [t(100) = −2.26, p < .03] adolescent QOL, better parent-reported family functioning [t(100) = 1.99, p < .05], and higher positive affect [t(100) = −2.22, p < .03]. The multivariate model, entering the significant associates of having a
future-oriented goal, was significant ($\chi^2 = 35.62; p = .00$). Age ($\beta = 0.68; p = .00$) and parent-reported adolescent QOL ($\beta = 0.06; p = .00$) were significant predictors (Table IV).

**Post Hoc Analyses Examining Perceived Self-Efficacy and Social Support Available to Achieve Goals That Were and Were Not Established Because of Cancer**

Post hoc analyses examined whether new goals established because of cancer were more achievable and supported than goals not influenced by cancer to further explore the findings that: (1) most adolescents with cancer identified having a new goal because of cancer, and (2) adolescents with cancer reported more self-efficacy and support to achieve goals than the control group (findings not hypothesized). Two paired sample t-tests examined the differences in average ratings of goal-related self-efficacy and average ratings of support related to the goals that were established in response to cancer and those that were not. This analysis was performed on a subset of 59 adolescents with cancer that reported a range of goals that were and were not established because of cancer. Perceived self-efficacy to achieve goals established because of cancer ($M = 5.05; SD = 0.95$) was higher than for the other goals [$M = 4.70, SD = 0.94; t(58) = 3.01, p = .00$]. Adolescents with cancer also reported that they had significantly more social support to achieve their goals established in response to cancer ($M = 4.38; SD = 1.72$) than their goals not because of cancer [$M = 3.86, SD = 1.43; t(58) = 2.52, p = .02$].

**Discussion**

To our knowledge, this is the first study to systematically assess self-identified goals of adolescents with cancer, and only the second to do so in an adolescent population with a chronic health condition (i.e., Helgeson & Takeda, 2009). Strengths of the study included the use of a control group, the developmental and clinical relevance of assessing goals, that it was theoretically informed, its relatively diverse sample, assessment of a broad range of goal-related variables to better understand the goal processes in the context of cancer, and the assessment of correlates of future-oriented and health-related goals.

There were more similarities than differences in goal content across the groups. As expected, academic, leisure, and interpersonal goals were the three content categories most often reported by both groups. These goal categories are typical of adolescents (Nurmi, 1989, 1991; Roisman et al., 2004) and many have been found to relate to well-being (Emmons, 1991; Helgeson & Takeda, 2009; Salmela-Aro & Nurmi, 1997). The relatively similar goal content across groups is consistent with previous research on goals of young adults (Schwartz & Drotar, 2009) and adolescents (Helgeson & Takeda, 2009) affected by pediatric chronic illness and findings that adolescents with cancer prioritize being “normal” (Ward-Smith, Hamlin, Bartholomew, & Stegenga, 2007; Zebrack, Bleyer, Albritton, Medearis, & Tang, 2006).

That the number that identified future-oriented goals also did not differ across groups may suggest that many adolescents with cancer maintain future-oriented goals because of high-survival rates of childhood cancer or perhaps a naiveté of the potential impact of cancer on long-term goals. Having a future-oriented goal was related to older age, better adolescent QOL, better family functioning, and more positive affect for adolescents with cancer. Not surprisingly, older age and better QOL were the strongest predictors, suggesting that younger patients and those with worse QOL may need assistance thinking about and establishing realistic and meaningful goals that

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**Table III. Binary Logistic Regression Predicting Presence of Health-Related Goals for Adolescents With Cancer (N = 102)**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$\beta$</th>
<th>SE</th>
<th>Wald</th>
<th>Odds Ratio (95% CI)</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.35</td>
<td>0.50</td>
<td>7.45</td>
<td>3.87 (1.46–10.24)</td>
<td>.01</td>
</tr>
<tr>
<td>Minority status</td>
<td>0.82</td>
<td>0.53</td>
<td>2.34</td>
<td>2.26 (0.80–6.41)</td>
<td>ns</td>
</tr>
<tr>
<td>Family functioning</td>
<td>−0.21</td>
<td>0.66</td>
<td>0.10</td>
<td>0.81 (0.22–2.95)</td>
<td>ns</td>
</tr>
<tr>
<td>Parent caring$^a$</td>
<td>0.03</td>
<td>0.06</td>
<td>0.31</td>
<td>1.13 (0.92–1.15)</td>
<td>ns</td>
</tr>
<tr>
<td>Family social support</td>
<td>0.09</td>
<td>0.06</td>
<td>2.33</td>
<td>1.10 (0.97–1.24)</td>
<td>ns</td>
</tr>
<tr>
<td>Constant</td>
<td>−3.88</td>
<td>2.49</td>
<td>2.43</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Overall $\chi^2$</td>
<td>22.24</td>
<td></td>
<td></td>
<td></td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. Parent caring and family functioning were reported by the adolescent. Gender was coded as 1 = male and 2 = female; minority status was coded as 0 = minority, and 1 = non-Hispanic White.

$^a$Models were run separately entering adolescent-reported parent caring in one and parent-reported caring in the other. Results did not differ between models, so only adolescent-report was reported.

ns = not significant.
are “long-term” and that can help motivate disease management, improve well-being, and prepare for the transition to adulthood.

Group differences emerged with regards to the presence of certain types of goals. Similar to a study on adults with cancer (Pinquart, Nixdorf-Hanchen, & Silbereisen, 2005), more adolescents with cancer endorsed having a health-related goal than healthy peers. Indeed, most adolescents who reported having a new goal because of cancer identified at least one disease management goal or health promotion goal. Correlates of health-related goals were lower family functioning, higher parental caring, more family social support, female gender, and non-Hispanic White race/ethnicity. In fact, among adolescents with cancer, 25% more non-Hispanic Whites reported having a health-related goal compared with adolescents of minority status. Thus, this finding may indicate disparities (e.g., suboptimal communication between patients/families and providers or lack of support to establish health-related goals) that should be further explored. That female gender was the only significant predictor of health-related goals in the regression model is consistent with a previous finding on gender and adherence (a construct theoretically related to disease management goals; Naar-King et al., 2006), suggesting that males may need extra support establishing and pursuing health-related goals important for disease management.

In addition to health-related goals, the number of adolescents who identified intrapersonal and leisure goals differed between groups. That adolescents with cancer reported a lower percentage of intrapersonal goals compared with healthy peers may suggest diminished efforts on introspective goals and redirected efforts toward goals more salient to disease management and maintaining normalcy during adolescence. This finding is supported by previous findings related to limited identity exploration (which is associated with intrapersonal goals) among adolescents with cancer (Gavaghan & Roach, 1987; Madan-Swain et al., 2000) and lower self-improvement projects among adolescents with diabetes relative to control subjects (Helgeson & Takeda, 2009). The identification of less leisure goals may have also been because of redirected priorities in addition to limited opportunities and/or physical limitations.

Additional findings support changed goal processes among adolescents with cancer. They identified less goals overall, but identified new goals established as result of cancer. Many of these new goals were related to disease management and were perceived to be more supported and achievable than goals not influenced by cancer. Such adjustments likely reflected the new context of their life as purported by goal-related models (Carver & Scheier, 2000; Schwartz & Drotar, 2006), and suggests potential resiliency and adaptability.

Possible limitations of the study should be considered. The use of a snowball recruitment strategy for some of the control group may have affected the comparison sample, given their relationship with adolescents with cancer. However, there is no evidence in the current study or a previous similar study to support this (Schwartz & Drotar, 2009). The reliance on self-report data, much of which were received by mail or were completed on participants’ own time, also limits the ability to monitor how measures were completed. In addition, because goal coding was conducted by investigators who also developed the coding scheme, the reliability with external raters is unclear. Also, despite efforts to have demographically matched groups, the fact that income was lower in the cancer group is a limitation. However, sociodemographically diverse samples are rare in pediatric cancer literature, which is a strength of the present study. The sample also represented a wide range of adolescent ages (13–19 years); possible differences in goals and appraisals between younger and older adolescents may not have been captured. The lack of participants with another chronic health condition also limits generalizability of findings

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### Table IV. Binary Logistic Regression Predicting Presence of Future-Oriented Goals for Adolescents With Cancer (N = 102)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>SE</th>
<th>Wald</th>
<th>Odds Ratio (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.68</td>
<td>0.18</td>
<td>13.89</td>
<td>1.97 (1.38–2.81)</td>
<td>.00</td>
</tr>
<tr>
<td>Family functioning qo</td>
<td>0.67</td>
<td>0.59</td>
<td>1.29</td>
<td>0.51 (0.16–1.62)</td>
<td>ns</td>
</tr>
<tr>
<td>QOL a</td>
<td>0.06</td>
<td>0.02</td>
<td>9.45</td>
<td>1.06 (1.02–1.10)</td>
<td>.00</td>
</tr>
<tr>
<td>Positive affect</td>
<td>0.04</td>
<td>0.03</td>
<td>1.35</td>
<td>1.04 (0.98–1.10)</td>
<td>ns</td>
</tr>
<tr>
<td>Constant</td>
<td>-12.34</td>
<td>3.50</td>
<td>12.42</td>
<td>0.00</td>
<td>.00</td>
</tr>
<tr>
<td>Overall χ²</td>
<td>35.62</td>
<td></td>
<td></td>
<td></td>
<td>.00</td>
</tr>
</tbody>
</table>

Note. Adolescent QOL and family functioning were reported by parents.

*Models were run separately entering adolescent-reported adolescent QOL in one and parent-reported adolescent QOL in the other. Only parent-reported adolescent QOL was significant and, thus, was included in the final mode.

ns = not significant.
Adolescent Self-Identified Goals

Beyond cancer. Finally, although the multiple group comparisons without statistical control increased the chance of Type I error, we felt the novelty and clinical significance of this research, and the fact that significant findings were supported by theory or previous empirical support, warranted less conservative statistical control.

More research is needed to prospectively understand how cancer and other chronic health conditions alter the process of setting and pursuing goals during adolescence—a developmental stage marked by an increase in autonomous goal setting. For example, because results reveal an increase in health-related goals among the cancer group, future research should explore how health-related goals are acquired, maintained, and whether they are associated with better disease management and future health promotion. The prevalence of future-oriented goals should also be studied prospectively in relation to successful markers of transition to adulthood (e.g., academic, professional, interpersonal achievement). Future research should also assess whether current and future-oriented goals of adolescents with cancer are realistic and adaptive in the face of cancer or whether they are hindered by cancer. Such health-related hindrance has been shown to relate to worse well-being and QOL (Schwartz & Drotar, 2009). It is also clinically important to further explore individual differences among those with cancer to identify who is better able to adjust goals in an adaptive way versus those who are not and need more support to balance personal and cancer-related goals. Finally, future research should include groups with different chronic health conditions to assess the generalizability of the findings beyond cancer.

Overall, the results support various goal theories postulating that life context (e.g., QOL, cancer), developmental status (e.g., age, adolescence), culture/sociodemographics (e.g., minority status, gender), and relational factors among patients and parents (e.g., family functioning, parental caring, family social support) relate to goals (Little et al., 2007; Nurmi, 1991; Schwartz & Drotar, 2006). Adolescents with cancer seem to modify their repertoire of goals, while also maintaining some developmentally “normal” goals, reflecting the need to balance various priorities in their life. This is a critical strength of this population, given most will survive to adulthood without acute health issues. However, some adolescents may have difficulty with this adapatational process and may need extra assistance. Indeed, not all adolescents with cancer identified a health-related or future-oriented goal, or acknowledged new goals as a result of cancer. Given the significance of goal-setting for adolescent development, transition to adulthood, and disease management (Arnett, 2000; Bandura, 2004; Nurmi, 1993; Schwartz & Drotar, 2006), it is essential to support adolescents in establishing a balance of normative and disease management goals. It is also important to identify areas where goal conflict (i.e., one goal inhibiting the pursuit of another one) or health-related hindrance of personal goals exist. Goal conflict and health-related hindrance relate to well-being, mood, and QOL (Emmons & King, 1988; Schwartz & Drotar, 2009) and also have the potential to impact adherence—a significant problem for adolescents with cancer and other chronic health conditions (Kondryn, Edmondson, Hill & Eden, 2011). Thus, clinical care of adolescent patients should include identification of the patient’s goals, personal and disease management, and discussion of how disease effects the pursuit and balance of the goals. It is also important to encourage the establishment of realistic and meaningful goals to sustain goal pursuit and enhance well-being and adherence (Bandura, 2004; Carver & Scheier, 1998). Overall, assessing and recognizing adolescents’ goals can highlight their priorities and development, in addition to targets of intervention, in the context of cancer and other health vulnerabilities.

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