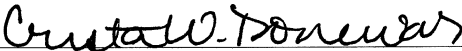
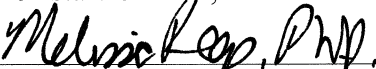



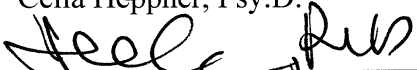
PEER VICTIMIZATION IN THE PEDIATRIC ONCOLOGY POPULATION: REVIEW OF  
RISKS, PROTECTIVE FACTORS, AND IMPLICATIONS FOR INTERVENTION

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by

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THESIS

Presented to the Faculty of the School of Health Professions

The University of Texas Southwestern Medical Center

Dallas, Texas

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF REHABILITATION COUNSELING

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Abstract

Childhood cancer presents patients and their families with unique short- and long-term challenges that can disrupt physical, emotional, academic, and family/social functioning. Further, many psychosocial adjustment difficulties common in the pediatric oncology population are similar to those that place healthy children at risk for peer victimization. Thus, pediatric oncology patients may be at increased risk for peer victimization. Based on current literature, this document will address the following hypotheses: (1.) children and adolescents with cancer are more at risk for peer victimization than healthy youth, (2.) children and adolescents with cancer are more susceptible to negative effects of peer victimization than healthy youth, and (3.) research examining anti-bullying interventions will indicate effective strategies that can be tailored to reduce peer victimization's prevalence, effects, and risks in the pediatric oncology population. To address the hypotheses, potential risks, protective factors, and adverse outcomes linking peer victimization to the pediatric cancer population will be reviewed. Then, existing intervention strategies shown to be effective in preventing and reducing effects of peer victimization in healthy populations will be presented. Lastly, a manualized peer victimization intervention program tailored to the pediatric oncology population will be provided.

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## CHAPTER ONE

### Statement of the Problem

Over the past several decades, peer victimization has gained attention as a common child and adolescent experience that negatively impacts physical, emotional, academic, social, and family development and functioning (For reviews, see Hawker & Boulton, 2000; Juvonen & Graham, 2014; Olweus, 2005). Based on extant research on peer victimization risk and protective factors for healthy children (e.g., Borowsky, Taliaferro, & McMorris, 2013; Karlsson, Stickley, Lindblad, Schwab-Stone, & Ruchkin, 2014; Kendrick, Jutengren, & Stattin, 2012; Lawson, Alameda-Lawson, Downer, & Anderson, 2013) and research support for significant life disruptions associated with childhood cancer (e.g., Colletti et al., 2008; French et al., 2013; Hile, Erickson, Agee, & Annett, 2014; Myers et al., 2014), this manuscript will explore peer victimization risk and protective factors likely to most impact pediatric cancer patients and survivors. My hypothesis is that pediatric cancer patients are at increased risk for peer victimization and iatrogenic effects of peer victimization. This manuscript will also examine existing peer victimization interventions for healthy youth and likely barriers to implementing those interventions with pediatric cancer patients. I propose that existing interventions for healthy children could be tailored for the pediatric oncology population and therefore warrant additional research. To evaluate my hypotheses, this paper will first review peer victimization risk and protective factors among healthy children and adolescents. Then, I will investigate how peer victimization risk and protective factors are likely to apply to pediatric cancer patients and survivors. Next, I will review peer victimization outcomes among healthy youth and will explore whether pediatric cancer patients may be at increased risk for iatrogenic effects of peer victimization. Then, I will review interventions designed to reduce peer victimization and



negative effects of peer victimization for healthy youth. Lastly, this paper will discuss ways in which current peer victimization interventions might be modified for pediatric oncology patients, including suggestion of a new manualized peer victimization intervention I recommend for further study.

## **CHAPTER TWO**

### **Review of the Literature**

#### **Defining Peer Victimization**

Peer victimization has gained increased media and policy maker attention over the past several decades, perhaps due to several highly publicized school shootings and adolescent suicides committed by chronically victimized youth (Juvonen & Graham, 2014; Olweus & Limber, 2010). As noted in Merrell and colleagues' (2008) meta-analysis, this increased attention has been paralleled by researchers' expanding interest in peer victimization. As the number of published studies evaluating peer victimization risk and interventions has increased, so too have variations in definitions used to conceptualize peer victimization phenomena (Hellstrom, Persson, & Hagquist, 2015). Although researchers have operationalized peer victimization in a variety of ways, a commonly used definition has become aggressive behavior and/or hurtful acts that are performed repeatedly and are intentionally directed toward a targeted victim whom the bully views as weaker or less powerful (Olweus & Limber, 2010). This definition emphasizes three criteria: intention, chronicity, and imbalance of power (Smith, del Barrio, & Tokunaga, 2012).

Theorists suggest peer victimization is intentional in that it occurs without apparent provocation and is specifically directed toward a victim (Olweus & Limber, 2010; Smith et al., 2012). Another distinguishing factor of peer victimization is the repetitive nature of the behavior; peer victimization is not characterized by an isolated bullying incident, but instead involves multiple negative acts spanning an extended period of time (Ybarra, Espelage, & Mitchell, 2014). Lastly, peer victimization is marked by an imbalance of power or strength (Ybarra et al., 2014). Bullies commonly select victims who the bully perceives as physically, emotionally, or

educationally weaker than themselves (Hodges and Perry, 1999). According to Olweus (1993), acts of aggression between two children of the same perceived power or strength is not considered peer victimization.

Of note, some scholars have suggested peer victimization is a form of abuse and is set apart from domestic abuse or child abuse by the specific context in which peer victimization takes place and the relationship between people involved (Olweus & Limber, 2010). Peer victimization extends beyond the bully-victim dyad and includes bystanders, supporters, and other peers who witness but do not intervene during peer victimization instances (Craig & Pepler, 1997; O'Connell, Pepler, & Craig, 1999). Thus, theorists propose peer victimization likely continues even if victims change their responses to victimization or if bullies are removed from the social context (Elledge, Cavell, Ogle, Malcolm, et al., 2010; Wolfer & Scheithauer, 2014). Approximately 60 percent of youth report being the victim of at least one bullying event at some point during childhood/adolescence (Olweus, 1993). However, depending on youths' age and developmental level, only approximately 10 to 20 percent report chronic peer victimization that lasts two or more school semesters (Boulton & Underwood, 1992; Schneider, O'Donnell, Stueve, & Coulter, 2012; Olweus, 1991; Perry, Kusel, & Perry, 1988).

Peer victimization presents in a number of forms. Stassen Berger (2007) conceptualizes five different types of peer victimization: physical (e.g., hitting or kicking), behavioral (e.g., stealing lunch or holding nose), verbal (e.g., making derogatory remarks or name calling), relational (e.g., deliberately ignoring or spreading gossip), and cyber (e.g., initiating hurtful comments or acts via electronics or social media). Among boys, peer victimization most commonly takes physical, behavioral, and verbal forms, whereas among girls, peer victimization tends to take the relational form (Robers, Kemp, Truman, & Snyder, 2012; Wang, Iannotti, &

Nansel, 2009). Because of youths' increased access to information and communication technology, cyberbullying has become increasingly prevalent across both genders (Kowalski & Limber, 2007; Sampasa-Kanyinga, Roumeliotis, & Xu, 2014). Scholars have proposed that cyberbullying is potentially the most harmful peer victimization type because cyberbullying allows incidents to occur outside the school context and permits bullies to remain anonymous with a limitless audience (Dooley, Pyzalski, & Cross, 2009; Sampasa-Kanyinga et al., 2014).

### **Effects of Peer Victimization**

Given researchers' increased interest in peer victimization phenomena, it is perhaps not surprising that a number of studies over the past several decades have evaluated iatrogenic concurrent and long-term effects of peer victimization. Most of this research has been conducted with healthy samples (Faith, Reid, Heppner, Hamill, Tarkenton, & Donewar, 2015), but understanding peer victimization outcomes among healthy samples is an important step in conceptualizing likely ways in which peer victimization could impact pediatric cancer patients and survivors. The following sections will provide an overview of negative outcomes commonly associated with chronic peer victimization in healthy youth. Outcomes will be conceptualized into four categories: physical, emotional, academic, and social/family outcomes.

#### **Physical Outcomes**

Peer victimization has been linked to victims' concurrent physical health outcomes (Bogart et al., 2013). Chronically victimized youth report higher levels of somatic symptoms than nonvictims (Gini, Carli, & Pozzoli, 2009; Nixon, Linkie, Coleman, & Fitch, 2011). Children who are bullied often complain of headaches, stomachaches, and other physical pains (Gini et al., 2009; Lohre, Lyderson, Paulsen, Maehle, & Vatten, 2011; Nixon et al., 2011). Similarly, studies have shown that peer victimization is related to victims' depressed immune and physical

functioning, resulting in increased sick absences from school and lower activity levels (Smith, Trope, McDonough, & DeFreese, 2015; Vieno et al., 2015). Further, chronically victimized children can experience a distorted perception of their physical appearance; findings suggest appearance-based teasing, specifically, is related to victims' body dysmorphic symptoms and associated functional impairment (Weingarden & Renshaw, 2015). In adult years, victimized youth have been shown to have poorer general health, including more sleep problems (Wolke & Lereya, 2014), body pain (Sigurdson, Wallander, & Sons, 2014), headaches (Sigurdson et al., 2014), and slower recovery from illnesses (Wolke, Copeland, Angold, & Costello, 2013).

### **Emotional Outcomes**

Peer victimization is associated with poor emotional and psychological outcomes concurrently and over time (Bogart et al., 2014). Concurrently, peer victimization has been linked with increased likelihood of depression and anxiety, elevated levels of fear and stress, loneliness, low self-esteem, and depleted self-image (Hamilton et al., 2013; Stapinski et al., 2014; Troop-Gordon, Rudolph, Sugimura, & Little, 2015). These emotional problems are closely linked to victims' development of externalizing and internalizing behaviors (Gower & Borowsky, 2013; Hemphill, Tollit, & Herrenkohl, 2014). In general, externalizing behaviors are fueled by aggression and directed toward the external environment. Externalizing behaviors associated with peer victimization include rule breaking, physical aggression, vandalism, and threatening others (Khatri, Kupersmidt, & Patterson, 2000). In contrast, internalizing behaviors are driven by negative thoughts and feelings and describe inward-focused experiences.

Internalizing behaviors associated with peer victimization include social withdrawal, feelings of loneliness and sadness, and fearfulness (Hawker & Bolton, 2000). Even more concerning, internalizing problems increase victims' likelihood of suicidal ideation and behaviors (Klomek et

al., 2008). Over time, previous studies have documented long-term risk of childhood peer victimization, including low self-esteem, decreased optimism, depression, anxiety, and aggression in adolescence (e.g., Smokowski, Evans, & Cotter, 2014) and adulthood depression, anxiety, loneliness, and fear of negative evaluation (Faith, Storch, & Roberti, 2008; Klomek et al., 2008).

### **Academic Outcomes**

In addition to physical and emotional problems, victimized youth are also at risk for poor academic outcomes. Concurrent to peer victimization, victims tend to have lower academic performance and school achievement, increased absences, decreased academic attainment, lack of academic motivation, and an inclination toward delinquency (Nansel, Haynie, & Simons-Morton, 2007; Kochenderfer & Ladd, 1996). Peer victimization interventionists have posited that peer victimization adds increased stress to the school environment, which impedes victims' ability to concentrate, interferes with academic performance, and may later result in the development of school-related anxiety (Sharp & Smith, 1994). Furthermore, a study by Vaillancourt and colleagues (2008) found negative academic outcomes related to peer victimization could perhaps result from alterations in brain functioning. Specifically, Vaillancourt and colleagues found that chronic peer victimization affected cortisol production in both males and females, which the researchers theorized could impair victims' ability to cope with stress in the school environment (Vaillancourt et al., 2008). Long-term, victimized youth have been found to have lower educational attainment, poorer financial management, greater job instability, and lower salary than their peers as late as age 50 years (Sigurdson et al., 2014; Wolke et al., 2013).

### **Social and Family Outcomes**

Lastly, researchers have found peer victimization has a negative effect on victims' social skill development and social interactions with peers and family members (Cook, Williams, Guerra, Kim & Sadek, 2010; Hussein, 2013; Tippett & Wolke, 2014). As suggested by Olweus (2003), bullied children often experience social isolation, likely as a result of victims' impaired ability to relate, empathize, and share other socially appropriate emotions with peers. Further, Olweus asserts that, because of decreased frequency of social interactions following peer victimization, victims may also develop deficits in conversation initiation, engagement in play, and other basic social skills (Olweus, 1993; Olweus, 2003). Personal suffering and social impairments associated with peer victimization may carry over to the family unit and create difficulties in victims' familial relationships, evidenced by findings that many bullied youth also experience problems with sibling aggression and victimization (Chung, Flook, & Fuligni, 2011; Tippett & Wolke, 2014; Wolke & Samara, 2004). Children who are bullied at school typically show poorer relationships with parents and siblings, characterized by low cohesion and minimal warmth (Cook et al., 2010; Wolke & Samara, 2004). In adulthood, victimized youth have reported more difficulties initiating and maintaining friendships and are less likely to report living with a partner/spouse or having adequate social support (Wolke et al., 2013).

### **Risk and Protective Factors**

Given negative outcomes associated with childhood peer victimization experiences (for review, see Olweus, 1993), many researchers have turned attention to identifying factors that could place children at risk for or protect children from peer victimization. Risk factors are defined as conditions or behaviors that increase a person's risk or susceptibility, whereas protective factors are defined as attributes that prevent or reduce an individual's vulnerability (for further discussion, see Hemphill et al., 2014). Children and adolescents with one or more

risk factor/s have an increased chance of peer victimization compared to those with no risk factors, with susceptibility compounding as risk factors mount (for review, see Liu & Graves, 2011). Many peer victimization risk factors are bidirectional, such that factors placing children at risk can also be exacerbated by victimization experiences or can develop as a result of chronic victimization (Eijnden, Vermulst, Rooij, Scholte, & Mheen, 2013; Reijntjes et al., 2010). In contrast, protective factors can greatly decrease children's and adolescents' peer victimization susceptibility and negative psychosocial outcomes while simultaneously maintaining or increasing overall health and well-being (Hemphill et al., 2014; Menrath et al., 2015).

Much of the current literature on peer victimization risk and protective factors is limited to healthy samples; however, review of these risk and protective factors elucidates the potential for pediatric cancer patients to be at significantly greater peer victimization risk compared to healthy youth. The following sections review risk and protective factors commonly associated with peer victimization in healthy youth. As with outcomes, I categorize risk and protective factors into four similar classifications: physical, emotional, academic environment, and demographic/social/family factors.

### **Physical Risk and Protective Factors for Healthy Youth**

**Risks.** Characteristics related to physical appearance or weakness can place children at risk for peer victimization. For example, physical unattractiveness is related to increased peer victimization risk across a variety of age groups (Closson, 2009; Knack, Tsar, Vaillancourt, Hymal, & McDougall, 2012). Children and adolescents who appear physically different from peers or who have visible physical anomalies related to a physical disability are also more likely to be selected as targets compared to children and adolescents without physical differences or visible physical anomalies (Masnari, Schiestl, Weibel, Wuttke, & Landolt, 2013; Sons, Parish, &



Peterson, 2012). Several studies have demonstrated that appearing physically different (e.g., overweight/obese, facial deformities, skin problems; Feragen & Borge, 2010; Griffiths, Wolke, Page, & Horwood, 2006; Masnari et al., 2013) or having a disability status (e.g., fragile medical conditions, attention-deficit/hyperactivity disorder, language impairment; Blood et al., 2011; Turner, Vanderminde, Finkelhor, Hamby, & Shattuck, 2011; Redmond, 2011; Twyman et al., 2010) sets children apart from the norm and increases likelihood of peer victimization across all ages and a variety of disability categories, with some studies finding that children as young as preschool age show social preference for children without physical disabilities (Sons et al., 2012). Physical weakness can also play a role in peer victimization risk; in line with the idea that peer victimization is marked by an imbalanced power or strength, theorists have proposed that bullies typically choose targets who the bully views as physically weaker in strength, height, or size (Pellegrini, 2002).

**Protective factors.** Studies evaluating peer victimization protective factors for youth with physical differences or disabilities is limited. One study suggested high global self-worth and self-esteem in overweight/obese children may reduce peer victimization risk (Fox & Farrow, 2009). Other research has shown that environmental factors, such as perceiving a supportive social context, decreases risk of peer victimization and related negative outcomes; for example, Brendgen and colleagues (2013) showed victimized youth with physical health problems are less likely to engage in internalizing/externalizing problems and less likely to develop further physical health problems when parent, teacher, and friend support is present.

### **Emotional Risk and Protective Factors for Healthy Youth**

**Risks.** Children's and adolescents' emotional characteristics are closely associated with their risk of being victimized by peers. Olweus (1994) described children at risk for peer

victimization as anxious, insecure, sensitive, and typically having a negative view of themselves. Similarly, Hansen and colleagues (2012) reviewed peer victimization emotional risk factors and found premorbid psychological functioning, such as low self-esteem, negative affectivity, social withdrawal, poor coping skills, and anxiety, can increase youth's risk for peer victimization. Consistent with the notion that premorbid psychological functioning plays a role in peer victimization risk (Hansen et al., 2012), victims often fall at two ends of a passive-aggressive spectrum; children who are bullied tend to either be weak/submissive and demonstrate internalizing behaviors (e.g., anxiety, depressive, and somatic symptoms), or forceful/assertive and evidence externalizing behaviors (e.g., aggression, rule-breaking, vandalism; Schwartz, Proctor, & Chien, 2001; Unnever & Cornell, 2005). On the passive end of the spectrum, children who internalize negative emotions, perhaps submitting to hostile behaviors in playgroups or crying in response to bullying, are likely to become a subtype of chronic victims (Bonanno & Hymel, 2013; Kelly et al., 2015; Menesini, Modena, & Tani, 2009). On the aggressive end of the spectrum, children who externalize negative emotions, perhaps by demonstrating aggression and reacting provocatively to bullying, tend to be another subtype of victims (Jia & Mikami, 2015; Menesini et al., 2009). In general, these internalizing, externalizing, and avoidant coping behaviors are related to concurrent and long-term peer victimization risk (Vaillancourt, Brittain, McDougall, & Duku, 2013; Terranova, Boxer, & Morris, 2010).

**Protective factors.** In contrast to risk factors, some emotional characteristics may protect children from chronic peer victimization. Studies suggest that children with more neutral emotional characteristics and proper coping responses to stress and anxiety have a decreased chance of peer victimization (Baldry & Farrington, 2005; Hemphill et al., 2009). Additional protective factors, such as emotional control (i.e., being able to control feelings and relax oneself

when tense), moral order (e.g., understanding the importance of honesty), and sufficient problem-solving skills, have been suggested to buffer against negative emotional outcomes related to peer victimization (Catalano & Hawkins, 1996; Hemphill et al., 2009). The relation between youths' emotional responses and reduced risk of peer victimization and adverse outcomes is perhaps not surprising given that neutral emotional responses are less reinforcing to bullies. Further, neutral emotional responses to peer victimization are often part of a strong set of socio-emotional skills (e.g., intrapersonal skills, stress management skills, interpersonal skills) that predict overall greater peer acceptance (Polan, Sieving, & McMorris, 2013).

### **Academic Environment Risk and Protective Factors for Healthy Youth**

**Risks.** Perhaps not unexpected given that youth spend a large portion of their waking hours in the school environment (for review, see Shoknoff, 2003), academic context provides another category of peer victimization risk factors. Because schools provide a salient operant learning context, scholars have suggested children who experience repeated negative interactions with peers and teachers could develop learned helplessness that promotes acceptance of the victim role, whereas children who have warm relationships with authoritative adults at school could be more likely to report bullying and decrease future peer victimization (Juvonen & Graham, 2014; Olweus, 1993). In line with this idea, studies have shown the academic environment is related to the level of peer victimization youth experience (Doll, Song, Champion, & Jones, 2011; Espelage, Polanin, & Low, 2014; Lawson et al., 2013). Espelage and colleagues (2014) showed that schools with negative and punishing environments had increased school-wide levels of peer victimization compared to schools with positive and motivating environments. Additional risk factors in the academic environment can also include teachers' indifferent attitudes toward peer victimization, students' lack of school belonging, and unhealthy

classroom climates characterized by poor peer relationships, poor student-teacher relationships, lack of teacher leadership, and underdeveloped problem-solving skills among students (Bernat, Oakes, Pettingell & Resnick, 2012; Doll et al., 2011; Espelage, Polanin, & Low, 2014; Lawson et al., 2013). Similarly, students who report lack of school connectedness and poor academic performance are more likely to report chronic peer victimization experiences (Loukas & Pasch, 2013; Nansel et al., 2007; Strom, Thoresen, Wentzel-Larsen, & Dyb, 2012).

**Protective factors.** In contrast to negative and punishing classroom environments, supportive school settings in which students experience encouragement of close friendships, positive student-teacher relationships, and strong school engagement can protect students both from peer victimization incidence and from negative outcomes associated with peer victimization (Cook et al., 2010; Doll et al., 2011; Lawson et al., 2013). Children's early development is strongly influenced by the quality of relationships with important people in their lives, including nonfamily providers of early care and education (for review, see Institute of Medicine, 2011). Thus, strong student-teacher relationships can serve as valuable protective factors for peer victimization because teachers are able to provide support and model core values in the school context (Casas, Ortega-Ruiz, & Del Rey, 2015; Espelage, Hong, Rao, & Thornberg, 2015). Additionally, high academic motivation and performance can diminish subsequent effects of peer victimization, with grade point average (GPA) being inversely related to peer victimization iatrogenic effects (Bernat et al., 2012). The link between GPA and decreased effects of peer victimization is likely explained by the high interrelation between youth's intelligence, emotional regulation, and social skills (i.e. youth who perform well in school are also youth who are likely to have good emotion regulatory skills and behavioral inhibition/control in the context of peer victimization experiences; for review, see Shoknoff,

2003).

### **Demographic, Social, and Family Risk and Protective Factors for Healthy Youth**

**Risks.** Demographic, social, and family influences can also place children at risk for peer victimization. Being male, middle school-aged, of an ethnic minority or religion, and/or from a low socioeconomic status increases the likelihood of a child becoming a victim (Due et al., 2009; Eslea & Mukhtar, 2000; Lawson et al., 2013). One possible explanation for higher reports of peer victimization in males is that boys typically engage in more observable (i.e., physical, behavioral, verbal) peer victimization types whereas girls tend to engage in a less observable (i.e., relational) peer victimization type (Robers et al., 2012; Wang et al., 2009). Therefore, males may be reported as being victimized more than girls when, in reality, males and females are equally victimized (Fite et al., 2013; Robers et al., 2012). Additionally, literature suggests peer victimization incidence is highest during transitional periods, perhaps explaining the higher risk for middle school-aged children who are experiencing a range of developmental, social, and academic changes in a short time span (Pellegrini, 2002; Olweus, 1993). Lastly, researchers have found that children with low socioeconomic status are at higher risk for peer victimization and related adverse outcomes (Due et al., 2009), perhaps because of associations between low socioeconomic status and further peer victimization risk factors (e.g., poorer academic achievement, parental unemployment, financial difficulties; Magklara et al., 2012).

Related to links between social competence and peer victimization (Sancassiani et al., 2015), chronically bullied youth often show deficits in social skills (Cook et al., 2010). As noted by Olweus (2004), victims often demonstrate impaired ability to relate, empathize, and share other socially appropriate emotions with peers. The relation between increased peer victimization and poor social skills may also be bidirectional. That is, victimized youth may initially lack

normative social skills, such as conversation initiation and engagement in peer play, but also develop further social skill deficits due to social anxiety and peer rejection (Braddock et al., 2015). Further, as shown by a study evaluating physical activity in children with Autism Spectrum Disorder, deficits in social skills may coincide with disrupted participation in age normative activities, which itself is a risk factor (Must, Phillips, Curtin, & Bandini, 2015). Researchers have shown decreased participation in school sports, playtime, or normal classroom settings is related to risk for peer victimization (O'Connor & Graber, 2014; Storch, Milsom, & DeBraganza, 2007). Furthermore, children with special health care needs and functional limitations compared to those with only prescription medications are more likely to disengage from normative school activities and more likely to experience peer victimization (Forrest, Bevans, Riley, Crespo, & Louis, 2013).

Lastly, family environments are important because of the large influence parent and other familial relationships have in children's development (For review, see Institute of Medicine, 2011). Social learning theory suggests that children's acquisition and regulation of behaviors is learned observationally or operantly through environmental events (Price & Archbold, 1995). Applying this theory to peer victimization risk, how a child learns to interact with family members in the home environment will likely affect the child's future interactions with peers. Indeed, family environments that consist of physical abuse, domestic violence, hostile attitudes, and inconsistent parenting increase children's peer victimization risk (Duncan, 1999). Parent characteristics commonly related to peer victimization are distant, uncaring fathers and hostile, over-involved mothers (Cook et al., 2010; Duncan, 1999). Given the importance of social learning at home, sibling relationships also can play a role in peer victimization risk (Whiteman, Bernard, & Jensen, 2011). Some scholars have suggested disrupted sibling relationships may

limit a child's opportunity to learn adaptive coping and conflict resolution skills (Faith, Elledge, Newgent, & Cavell, 2015). In line with this supposition, at least one study found that sibling relationships characterized by extreme dominance hierarchies and high levels of conflict place children at greater risk for self- and teacher-rated peer victimization (Faith, Elledge, et al., 2015).

**Protective factors.** Likely because of the influential role interpersonal relationships play in children's development (Shoknoff, 2003), strong social and family support can serve as peer victimization protective factors. Literature has repeatedly shown that a child or adolescent with perceived social support is often protected from peer victimization and associated negative outcomes (Karlsson et al., 2014; Kendrick et al., 2012; Lawson et al., 2013). In fact, just one reciprocated best friendship partially mitigates peer victimization risk and the degree to which youth feel distressed following peer victimization, perhaps because bullies are less likely to target youth who have high perceived social status and support from a best friend (Bollmer, Milich, Harris, & Maras, 2005; Kendrick et al., 2012). Additionally, families characterized by love, stability, security, responsive interactions, and encouragement of learning give children the best opportunity to developmentally thrive (for review, see Shoknoff, 2003). Thus, strong family support, such as supportive and authoritative parenting, parent-child connectedness, and caring by a friend or non-parental adult has been shown to reduce peer victimization risk and related negative sequelae (Hemphill et al., 2009; Hemphill et al., 2014; Sapouna & Wolke, 2013; Borowsky et al., 2013). Particularly protective appear to be parenting styles characterized by acceptance, appropriate supervision, and appropriate support of child autonomy (Booth-LaForce et al., 2012; Shoknoff, 2003). Given the importance of social learning within the family context (e.g., adaptive coping, conflict resolution), healthy sibling relationships characterized by balanced levels of dominance between siblings and conflict in the context of a warm, cohesive

family environment help protect against peer victimization as well (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010; Faith, Elledge, et al., 2015; Sapouna & Wolke, 2013). Lastly, consistent with the theory that social interactions are observed, learned, and repeated in future interactions, overall prosocial involvement with the family is related to reduction in negative effects of peer victimization, possibly because the child is able to apply learned appropriate social behaviors to the social context (Bowes et al., 2010, Hemphill et al., 2014; Price & Archbold, 1995).

### **Pediatric Cancer**

Developing a tailored peer victimization intervention for the pediatric oncology population requires understanding elements of cancer treatment and related psychosocial adjustment predictors and outcomes. Therefore, this chapter of this paper will review relevant medical and psychosocial correlates of pediatric cancer diagnosis, treatment, and survivorship. Advancements in pediatric cancer diagnostic clarity and treatment have greatly increased survival rates in the pediatric oncology population (National Cancer Institute, 2014). Whereas 5-year event free survival rates in the 1960s hovered around 50%, approximately 80% of children newly diagnosed today will survive (National Cancer Institute, 2014). Increased survival rates have turned new attention to studying psychosocial stressors and improving long-term quality of life for pediatric cancer patients and survivors (e.g., Brinkman et al., 2014; Chow et al., 2013; D'Agostino & Edelstein, 2013; Hocking et al. 2011; Kunin-Batson, Kadan-Lottick, & Neglia, 2014; McLoone, Wakefield, & Cohen, 2013).

The cancer treatment experience can be divided into three phases: diagnosis, treatment, and post-treatment/survivorship. In the sections that follow, I will provide a medical overview for each pediatric cancer phase. I will also review typical psychosocial adjustment during each



cancer phase. Finally, I will synthesize published literature on psychosocial adjustment to cancer treatment phases and will present a framework for understanding peer victimization-specific risk in pediatric cancer patients and survivors.

Specific cancer diagnoses vary greatly in treatment course, prognosis, and late effects (National Cancer Institute, 2014). So, for the purposes of this review, I will focus specifically on the three most common pediatric cancer diagnostic categories: (1) acute lymphoblastic leukemia (ALL), (2) central nervous system (CNS) tumors, and (3) neuroblastoma. These three diagnoses account for 59% of all pediatric cancer diagnoses (National Cancer Institute, 2014). Medical information specific to these diagnoses provides a context in which to understand psychosocial stressors related to pediatric cancer diagnosis, treatment, and post-treatment/survivorship. Of note, peer victimization risk factors and psychosocial adjustment outcomes highlighted below will elaborate upon the peer victimization risks and negative outcomes introduced in prior sections but will focus on application to the pediatric oncology population. Discussion of risk factor applicability to the pediatric oncology population will serve the purpose of evaluating hypotheses 1 and 2: (1) children and adolescents with cancer are at a greater risk for peer victimization compared to healthy children and adolescents, and (2) children and adolescents with cancer are more susceptible to the negative effects of peer victimization compared to healthy children and adolescents.

## **Diagnosis**

**Medical overview.** Pediatric cancer diagnosis is often precipitated by fatigue, dizziness, chronic pain, and/or abnormal bruising (Children's Oncology Group, 2011). This symptom presentation is typically followed by a referral to a hospital or pediatric oncology specialist and a subsequent series of medical tests that can be both invasive and painful for the child and

frightening for the entire family (Levi, Marsick, Drotar, & Kodish, 2000). Based on results from medical evaluations and procedures, pediatric oncologists generally provide families a wealth of information about diagnosis, treatment options, and prognosis. Diagnostic factors and prognoses for the three most common childhood cancers (i.e., ALL, CNS tumors, neuroblastoma) are provided below.

***ALL diagnosis.*** ALL is a cancer of lymphocytes, or cells that form white blood cells. ALL begins when a young lymphocyte develops a series of mutations that transform the lymphocyte into a lymphoblast (i.e., leukemia cell). The lymphoblast then multiplies uncontrollably and limits healthy cells in the bone marrow. Lymphoblasts can spread into the bloodstream, lymph nodes, spleen, liver, and other organs. Clinically, children with ALL typically present with signs and symptoms of marrow failure. Symptoms include fatigue, irritability, anorexia, and low-grade fever. Bone pain is also a common presentation and, in severe cases, can lead to abnormal gait or refusal to walk. Other concerning signs often preceding diagnosis are pallor, bruising, and petechiae (Winick, Raetz, Ritter, & Carroll, 2010).

ALL can be detected and confirmed through a number of tests. An initial complete blood count (CBC) is used to reveal abnormal blood counts (e.g., elevated white blood cells, low platelet count). A lumbar puncture can be used to detect spinal fluid lymphoblasts by looking at the spinal fluid through a microscope after the procedure is performed (Children's Oncology Group, 2011). A physical examination and radiographic scans can reveal airway or pulmonary compromise associated with lymphoblasts and lymphomas. X-rays of the long bones may demonstrate "growth arrest" lines that frequently correspond with bone pain (Winick et al., 2010).

Physicians rely on a number of prognostic indicators to classify ALL patients' likelihood

of long-term survival and appropriate treatment course. Age at diagnosis and initial white blood count (WBC) are among the most useful prognostic markers (Children's Oncology Group, 2011). A National Cancer Institute (NCI; Smith et al., 1996) criterion classifies standard-risk ALL as ALL that occurs in children 1 to 10 years of age with a WBC less than 50,000. In contrast, high-risk ALL involves children over age 10 years and/or children who have a WBC greater than 50,000. Gender is also a prognostic marker, with females faring better than males and generally requiring a shorter duration of treatment. Lastly, response to initial treatment has become one of the most important prognostic indicators. Failure to achieve complete clinical remission at the end of induction chemotherapy has been associated with an extremely poor prognosis (Smith et al., 1996).

***CNS tumor diagnosis.*** The central nervous system (CNS) is comprised of the brain and spinal cord. CNS tumors develop through a series of mutations in a CNS cell. These mutations cause CNS cells to multiply uncontrollably and form tumors. CNS tumors can be either malignant (fast-growing with a tendency to spread) or benign (slow-growing without a tendency to spread); however, all types of CNS tumors can be serious because they involve vital organs that control body functions such as movement, thinking, learning, breathing, and heart rate (Children's Oncology Group, 2011). Preceding and for some duration following diagnosis, children with CNS tumors typically present with symptoms related to raised intracranial pressure, such as headaches, vomiting, lethargy, and drowsiness. Other common symptoms include nose bleeds, back pain, and lower limb weakness (Pizer, Clifford, & Michalski, 2010).

In addition to undergoing blood draws and a lumbar puncture to examine the child's CBC and spinal fluid, children newly diagnosed with a CNS tumor must also undergo a staging and metastatic evaluation. This process generally includes both non-enhanced and contrast-enhanced

magnetic resonance imaging (MRI) of the brain and spine. MRIs inform the medical team of tumor invasiveness, location, and size to allow for proper diagnosis and treatment (Pizer et al., 2010).

Prognosis for children with CNS tumors is most closely related to age of the patient, extent and nature of the disease at diagnosis, and location of the tumor. Standard-risk CNS tumors include tumors that occur in children over the age of 3 years and without evidence of metastatic spread. The worst prognoses are generally for very young children and for those children with metastatic spread (Pizer et al., 2010).

***Neuroblastoma diagnosis.*** Neuroblastoma is a type of solid tumor that involves developing cells in the sympathetic nervous system. Neuroblastoma begins when a young cell of the sympathetic nervous system, a neuroblast, begins to develop mutations and reproduce uncontrollably, forming cancerous tumors. Neuroblastoma can begin in many body locations, but is most commonly found in the adrenal gland on top of the kidney (Children's Oncology Group, 2011). Neuroblastoma can spread ("metastasize") to many areas of the body, including bone marrow, bones, and lymph nodes. Neuroblastoma is a serious diagnosis because it involves the sympathetic nervous system, which is responsible for involuntary actions such as heart rate, blushing, and dilation of the pupils (Children's Oncology Group, 2011). Prior to diagnosis, children with neuroblastoma present with quite varied signs and symptoms depending on primary tumor location and metastasis. Children with localized disease are often asymptomatic, while children with metastatic disease often experience fever, malaise, anemia, and bone pain secondary to the tumor (Katzenstein & Cohn, 2010). Other common initial symptoms are hypertension, tachycardia, headache, sweating, and flushing. Children with tumors located adjacent to or on the spine may show signs of spinal cord compression, such as weakness,

paraplegia, and bowel/bladder dysfunction. Respiratory distress and organ compromise can also occur as a result of tumor location (Katzenstein & Cohn, 2010).

An important component of the medical evaluation for neuroblastoma includes a bone marrow aspiration to detect tumor cells. Examination of the tumor tissue is also important for staging the disease. Further, an MRI can be helpful in evaluating the extent of the disease in patients with suspected spinal tumor and/or cord compression. Important prognostic factors for neuroblastoma are stage and age at time of diagnosis. For all stages of neuroblastoma (1, 2, 3, 4, 4S), infants less than one year of age have a significantly better prognosis. Infants over age one year with stage 1, 2, or 4S are considered low-risk, while children over age one year and/or with stage 3 or 4 tumors are considered high-risk (Brodeur et al., 1993).

#### **Psychosocial adjustment to diagnosis (across pediatric cancer diagnoses).**

Information provided at the time of diagnosis can invoke a wide range of emotional responses for the child and family (Levi et al., 2000; Myers et al., 2014). Because families must cope with diagnosis, make quick treatment decisions, introduce new home regimens, and continue the family's normal daily routines, children, parents, and other family members often experience a marked increase in stress (Hile et al., 2014; Streisand, Kazak, & Tercyak, 2003), with anxiety related symptoms being particularly pronounced in the first month following diagnosis (Myers et al., 2014). In fact, one study found that up to 43.7% of patients and parents report significant symptoms related to posttraumatic stress disorder following pediatric cancer diagnosis. Other studies have found that, following a child's diagnosis of a serious illness, 49-54% of parents meet criteria for acute stress disorder and 15-27% of parents fall in the moderate to severe range for depression and anxiety (Muscara, McCarthy, Wolf, Hearps, Burke, & Anderson, 2015). Research has shown that parent posttraumatic stress, depression, and anxiety are significantly associated

with caregiver's perceived role strain and parent-report of child emotional adjustment difficulties (Malpert et al., 2014). Perhaps because of links between parent's health and well-being, children's development, and family environment (for review, see Shoknoff, 2001), parents who report higher levels of parenting stress also report higher levels of internalizing and externalizing problems in their children and difficulties related to family functioning (Colleti et al., 2008; Hile et al., 2003). Specific to the CNS tumor population, Kronenberger and colleagues (1996) found that level of parental distress/stress and children's use of avoidant coping strategies prior to bone-marrow transplantation predicted concurrent child adjustment problems. Of note, no studies have explicitly evaluated peer victimization in the days or weeks following pediatric cancer diagnosis; however, a conceptualization of likely peer victimization risk factors for pediatric cancer patients will be provided in the following chapter.

## **Treatment**

**Medical overview.** Pediatric cancer involves a large and diverse group of diseases. Depending on the specific cancer diagnosis, cancer treatment can include any one or combination of surgery, chemotherapy, radiation therapy, and bone marrow transplant (National Cancer Institute, 2014). Surgical cancer intervention is generally used to remove tumors and for placement of a port that allows easier access to the child's bloodstream. Surgery is rarely sufficient as the sole treatment modality for cancer because of tumor metastases and risk of recurrence, so surgery is usually used in combination with chemotherapy and/or radiation therapy (for review, see Brown, 2006). During chemotherapy, chemotherapeutic agents are administered orally, intravenously, intramuscularly, or into the spinal fluid to prevent rapid cell growth. Concurrent adverse side effects of chemotherapy are numerous and include nausea, vomiting, hair loss ("alopecia"), decreased appetite, chemotherapy induced cognitive

dysfunction/impairment, mouth sores/mucositis, and low blood counts (for review, see Brown, 2006). Radiation therapy is typically used when chemotherapy and surgery cannot completely eradicate a tumor or when tumors are otherwise likely to recur. Radiation therapy also has adverse side effects, including fatigue, poor appetite, and irritation of the skin where radiation was directed (Children's Oncology Group, 2011). In severe cases, radiation therapy administered to the CNS has irreversible side effects, such as decreased white brain matter resulting in significant learning impairments and neurocognitive deficits. Fortunately, improvements in CNS radiation, such as focal radiation (e.g., proton therapy), have allowed for smaller radiation doses and decreased severity of neurocognitive late effects (Armoogam & Thorp, 2015). In the last treatment option, bone marrow transplant, new bone marrow is administered intravenously to produce new blood-forming tissue. During and for several months following bone marrow transplant, patients are at acutely high risk for infection and graft-versus-host disease, in which the recipient's body rejects new tissue (National Cancer Institute, 2014). The typical treatment course recommended for the most common childhood cancers (i.e., ALL, CNS tumors, neuroblastoma) are provided in the following sections.

**ALL.** The course for ALL treatment is tailored to the predicted likelihood of relapse (based on prognostic indicators and, sometimes, genetic typing) and includes multiple phases that typically span two to three years (Children's Oncology Group, 2011). The first treatment phase for ALL is induction therapy (i.e., chemotherapy agents). The goal of induction is to rapidly eliminate as many malignant cells as possible. A combination of up to four chemotherapy agents may be used based on the leukemia cells' projected course (Winick et al., 2010). Following the induction phase, a consolidation chemotherapy phase may be indicated. Consolidation is designed to expose leukemia cells to non-cross-resistant drug combinations and

for CNS prophylaxis (Winick et al., 2010). Once remission occurs, a post-induction intensification phase begins. Intensification of chemotherapy agents during this phase has been associated with significant improvements in event free survival (Hann et al., 2000). The last ALL treatment phase, maintenance chemotherapy, is unique for ALL because ALL maintenance chemotherapy typically extends over a minimum of two years (Children's Oncology Group, 2011).

***CNS tumors.*** The standard treatment approach for CNS tumors includes complete or near-complete surgical excision of the tumor when possible, followed by post-operative craniospinal radiation therapy (CSRT) and chemotherapy (Children's Oncology Group, 2011). Radiation therapy is a critical component of CNS tumor treatment and quality of radiation therapy is essential to successful management of the disease. Along with surgery and radiation therapy, chemotherapy may be included in the treatment plan to further manage the disease and risk of recurrence (Pizer et al., 2010). CNS tumor treatment duration generally depends on tumor volume and location and can extend from a day for surgical tumor excision to several years (American Cancer Society, 2015).

***Neuroblastoma.*** For low-risk neuroblastoma patients, minimal treatment is usually required. Studies have shown treatment with surgery alone have resulted in over a 95% survival rate of patients with stage 1 or 2 neuroblastoma (Nitschke et al., 1988). For high-risk neuroblastoma patients (3 & 4), best treatment results have been related to intensification of induction therapy, megatherapy consolidation, bone marrow transplant, and supportive care. Surgical intervention of the tumor may also be an option for high-risk neuroblastoma; however, high surgical risks and potential surgical morbidity must be considered. Due to uncertainty about effectiveness with neuroblastoma, radiation is typically only used in high-risk stage 4S



neuroblastoma tumor treatment (Cheung & Heller, 1991, 2010). Neuroblastoma treatment varies widely in duration, from a tumor removal day surgery for low-risk patients to several years for high-risk patients (National Cancer Institute, 2014).

**Psychosocial adjustment to cancer treatment (across pediatric cancer diagnoses).** As activities related to cancer treatment begin to take the forefront in patients' daily life, disruption in patients' participation in academic pursuits, extracurricular activities, and physical activities occur because of weakness, pain, risk of infection, and frequent medical appointments and hospitalizations (French et al., 2013; Gotte, Taraks, & Boos, 2014). Related to social functioning, the high intensity and side effects associated with chemotherapeutic agents, radiation, and bone marrow transplant can lead to marked changes in the patients' social inclusion, which in turn can impede the development of normal social skills and impact emotional functioning (Levin Newby, Brown, Pawletko, Gold, & Whitt, 2000). Limited age normative activities (e.g., physical activity, sports) due to greater risk of infection, increased fatigue, general malaise, or overall perceptions of being different from peers can also negatively impacts patients' social development during cancer treatment (Gotte et al.2014). Additionally, childhood cancer diagnosis increases the likelihood of parental overprotection and parents' perceptions of child vulnerability (Colletti et al., 2008; Hullman, Wolfe-Christensen, Meyer, McNall-Knapp, & Mullins, 2010; Mullins et al., 2007; Vrijmoet-Wiersma et al., 2010). Parental overprotection is defined as excessive protective parenting behavior given the child's developmental stage and abilities, whereas perceived child vulnerability is defined as parental beliefs or attitudes about a child's susceptibility to harm (Mullins et al., 2007). Literature suggests the presence of overprotective parenting and parents' perception of child vulnerability is positively related to children's poor emotional adjustment and social behaviors during and after cancer treatment

(Colletti et al., 2008; Hullman et al., 2010; Mullins et al., 2007). Of note, no studies have empirically evaluated peer victimization incidence for pediatric cancer patients during treatment, but likelihood for increased susceptibility to peer victimization and related adverse outcomes for this populations is discussed in the next chapter.

### **Post-treatment/Survivorship**

**Medical overview.** Today more than 80 percent of children diagnosed with cancer live at least five years after their diagnosis (National Cancer Institute, 2014). Such promising survival rates reflect the importance of understanding post-treatment medical, cognitive, and psychosocial late effects that could place children at risk for peer victimization. Adherence to physician-prescribed medication regimens (i.e., following medications/self-care after acute hospital care) and routine follow-up medical appointments are defining features of the post-treatment process, especially early into the survivorship phase (for review, see Brown, 2006). Perhaps presenting even more life disruption, however, are the late effects of cancer treatment. Many cancer treatment late effects can impact childhood cancer survivors' development. Medical late-effects related to a variety of cancer treatment modalities include cardiomyopathy, hypothyroidism, obesity, short stature, infertility, and risk of a second cancer diagnosis (Chow et al., 2013; Gunn et al., 2015; Hudson et al., 2015; Hummel et al., 2015; Ozono et al., 2014 ; Slater et al., 2015; Zeller et al, 2013 ). Specific late effects related to the three most common childhood cancers are detailed below.

**ALL.** The late effects of ALL are secondary to long-term chemotherapy toxicities and typically present in cardiac, orthopedic and neurologic complications. For example, studies focusing on cardiac toxicity in childhood cancer survivors have found children who received anthracycline chemotherapy have up to a 16% chance for congestive heart failure (CHF) in early

adulthood (before age 40), with increasing risk into later adulthood (Bluhm & Barac, 2015; Kremer, van Dalen, Offringam & Voute, 2002). Another possible late effect of ALL treatment is osteonecrosis (i.e., bone disease). In some survivors, osteonecrosis can lead to avascular necrosis and femoral head collapse (Mattano, Sather, Trigg, & Nachman, 2000). Childhood cancer survivor studies have also reported significant deficits in survivors' cognitive functioning, with deficits most pronounced in survivors' short-term memory, processing speed, visuomotor coordination, sequencing ability, and academic achievement (Cousens, Ungerer, Crawford, & Stevens, 1991).

**CNS tumors.** Craniospinal radiation therapy is an important predictor of childhood CNS tumor survivors' late effects. Craniospinal radiation late effects depend largely on size of dose per fraction, with a larger number of smaller fractions ("hyperfraction") causing the least damage to white brain tissue (Heideman, Packer, Albright, Freeman, & Rorke, 1989). Additionally, accurate tumor volume assessment and precise location radiotherapy are vital to lowering brain matter damage and related late effects (Heideman et al., 1989). Focal radiation (i.e., proton therapy) uses charged particle beams to target unhealthy tumor tissue and to avoid healthy tissue so as to reduce brain tissue damage and late effects (Kooy & Grassberger, 2015). Due to rapid brain development, children receiving radiation therapy prior to age 3 years often evidence greatest brain tissue damage and resulting late effects (Heideman et al., 1989). Common late effects related to craniospinal radiation therapy include significant growth impairment, endocrine dysfunction, and hearing loss (Adan, Sainte-Rose, Souberbielle, Zucker, Kalifa, & Brauner, 2000). Further, perhaps most significant are cognitive late effects related to craniospinal radiation. Studies have documented significant intellectual impairments of up to 30 points in CNS tumor survivors' intelligence quotients, particularly in children who were under age 8 years

at the time of therapy (Lannering, Marky, Lundberg, & Olsson, 1990; Ris, Packer, Goldwein, Jones-Wallace, & Boyett, 2001). Other cognitive difficulties apparent in survivors are related to social and educational functioning. Studies have repeatedly shown CNS tumor survivors experience educational difficulties related to attention deficits, slower processing speed, and executive functioning problems (Krawczuk-Rybak et al., 2012; Krull, Hockenberry, Micketova, Carey, & Moore, 2013; Reddick et al., 2014; Robinson et al., 2010).

***Neuroblastoma.*** Late effects from neuroblastoma are usually related to long-term chemotherapy-related complications and include neurologic and developmental problems (Katzenstein & Cohn, 2010). Late effects are typically most pronounced for high-risk disease patients and for low-risk disease patients who experience spinal cord compression. For high risk neuroblastoma survivors, late effects can include significant growth problems, secondary malignancies, and hearing loss (Katzenstein & Cohn, 2010). For low risk neuroblastoma survivors who experienced spinal cord compression, late effects may include scoliosis and gait problems (Katzenstein & Cohn, 2010). Other possible late effects related to chemotherapy include cardiac problems, obesity, infertility, and cognitive difficulties (Hayes & Smith, 1989). For neuroblastoma survivors who underwent bone-marrow transplant, studies have shown increased osteoporosis, congestive heart failure, abnormal balance, chronic weakness, and tremor (Katzenstein & Cohn, 2010).

**Psychosocial adjustment to survivorship.** The end of cancer treatment does not mark the end of a child's cancer experience. As noted by a number of scholars, an important part of the post-treatment/survivorship phase is coping with and acclimating to a relatively normal life (D'Agostino & Edelstein, 2013; Landier et al., 2004; McLoone et al., 2013). Childhood cancer survivors could experience increased peer victimization risk due to medical late effects and

associated adjustment difficulties; however, no studies have explicitly examined peer victimization and associated adverse outcomes for pediatric cancer survivors. This section will review psychosocial adjustment considerations related to survivorship; the following chapter will conceptualize how these factors could place pediatric cancer survivors at increased peer victimization risk.

Studies comparing childhood cancer survivors to healthy siblings show survivors report more somatic complaints and disorders, including recurrent episodes (e.g., urinary tract infections, asthma, pain) and chronic conditions (e.g., pain conditions, diabetes, neurological problems, musculoskeletal problems, vision difficulties, cardiac abnormalities; Chow et al., 2013; Gunn et al., 2015; Hudson et al., 2015; Hummel et al., 2015; Ozono et al., 2014; Slater et al., 2015; Zeller et al., 2013). These somatic complaints and disorders can pose significant stress for survivors and their families and can interfere with survivors' ability to participate in age normative activities, maintain developmentally appropriate social inclusion, and pursue academic goals (French et al., 2013; Moyer et al., 2012; Robinson et al., 2010; Schulte & Barrera, 2010; Wilson et al., 2014). Furthermore, childhood cancer survivors commonly report difficulties related to sleep (e.g., poor sleep routines, chronic fatigue, insomnia), impacting both physical and psychological functioning (Brimeyer et al., 2015; Daniel et al., 2015; Zeller et al., 2013; Zhou & Recklitis, 2014).

Negative psychological effects often begin during cancer treatment and continue to develop after treatment completion because of treatment late effects and difficulty transitioning back to a normal daily routine (for review, see Ljungman et al., 2014). Although the majority of survivors do not experience significant psychosocial adjustment difficulties, a significant subset of survivors are at increased risk for internalizing problems (e.g., depression and anxiety) and

suicidal ideation and behaviors, especially for survivors who develop chronic physical health conditions (Ahomaki et al., 2015; Brinkman et al., 2014; Shah et al., 2015; Wegenroth et al., 2015). Long-term, pediatric cancer survivors' developmental and cognitive complications can lead to limited autonomy, poor academic achievement, reduced career options, and compromised quality of life (D'Agostino & Edelstein, 2013; Gerhardt et al., 2007; Northman et al., 2015; Zebrack & Landier, 2011). Other long-term difficulties can be social in nature, including having a limited understanding of social rules and norms (e.g., turn taking) and relating better to older children than to same-aged peers (McLoone et al., 2013; Schulte & Barrera, 2010).

In addition to the above psychosocial concerns, CNS tumor survivors often experience additional psychosocial risk factors related to survivorship. Advancements in medical research has allowed for vast improvements to minimal dosage and specificity of craniospinal radiation therapy (Heideman et al., 1989); however, many CNS tumor survivors continue to experience late effects above and beyond those experienced by other pediatric cancer survivors. For example, CNS tumor survivors can experience significant cognitive difficulties as a result of CNS disease, radiation necrosis to white brain matter, and neurotoxicity from chemotherapy agents (Kadan-Lottick et al., 2010; Krawczuk-Rybak et al., 2012; Krull et al., 2013; Kunin-Batson et al., 2014; Reddick et al., 2014). These neurocognitive problems are closely linked with academic difficulties (Ach et al., 2013) and may necessitate special education services (for review, see Northman, Ross, Morris, & Tarquin, 2015). Because poor academic achievement and motivation (Bernat et al., 2012; Loukas & Pasch, 2013; Nansel et al., 2007; Strom, Thoresen, Wentzel-Larsen, & Dyb, 2012) are linked with increased likelihood for peer victimization in healthy samples, CNS tumor patients experiencing cognitive deficits related to treatment and late effects may be more susceptible to peer victimization compared to other pediatric oncology

survivors. Related to physical appearance and functioning, CNS tumor survivors are at greater risk for obesity compared to healthy samples (Iughetti, Bruzzi, Predieri, & Paolucci, 2012; “Cranial Radiation,” 2015; Siviero-Miachon et al., 2013; Zhang et al., 2014), which itself is shown to correlate with reduced peer liking and increased peer victimization risk (Van Geel, Vedder, & Tanilon, 2014). Long-term, peer victimization risk factors specific to the CNS tumor population may be compounded by survivors’ frequent reports of lower health-related quality of life and greater impairments in activities of daily living (An, Song, Sung, & Joung, 2011).

### **Interventions**

As suggested by Olweus (1994), a child’s fundamental democratic right is to feel safe in their environment. Consistent with Olweus’s assertion, peer victimization research and intervention programs have gained considerable momentum in the past few decades (Juvonen & Graham, 2014; Merrell et al., 2008). Intervention programs can be categorized as universal, selective, or indicated (Bradshaw, 2015; Juvonen & Graham, 2014; Pepler, 2006; Smith, Ananiadou, & Cowie, 2003). The majority of extant peer victimization intervention studies have focused on implementation of universal interventions (Evans, Fraser, & Cotter, 2014; Merrell et al., 2008). With regard to peer victimization, universal intervention programs are designed to address peer victimization as a systematic social problem (Olweus, 1993; Juvonen & Graham, 2014). Universal interventions involve the entire school, including students, parents and school staff; all school members are accountable for reducing the acceptability and incidence of peer victimization and interventions are applied irrespective of each student’s individual risk (Olweus, 1993; Juvonen & Graham, 2014). In contrast, selective interventions specifically target children at-risk for peer victimization. Selective interventions are preventative in nature; their aim is to reduce risks and enhance protective factors in youth who are identified as being more susceptible

to peer victimization and related ill effects (Bradshaw, 2015). The third intervention type, indicated interventions, target children who are already being victimized by peers or who are already showing early signs of negative effects resulting from peer victimization experiences (Juvonen & Graham, 2014; Pepler, 2006). Indicated interventions take a problem-solving approach once the child and peer victimization- related concerns are recognized.

As discussed in previous sections, children and adolescents with cancer, specifically those with CNS tumors, are likely at increased risk for peer victimization incidence and iatrogenic effects. Given increased risk, research is needed to better understand pediatric CNS tumor patients' peer victimization experiences and to evaluate interventions designed to reduce patients' peer victimization risk. To date, most peer victimization intervention studies have been confined to samples of healthy youth. Few studies have evaluated the efficacy of peer victimization interventions with chronically ill youth, and no studies have examined the efficacy of peer victimization programs for the pediatric oncology population. Below, I will provide an overview of extant literature evaluating the efficacy and effectiveness of universal, selective, and indicated peer victimization intervention programs. Because no studies have evaluated peer victimization interventions with the CNS tumor or broader pediatric oncology population, I will provide an overview of peer victimization intervention research with healthy youth and with youth who have non-oncological chronic illnesses.

### **Universal Interventions for Healthy Youth**

Public awareness of the need for peer victimization intervention programs first surfaced in the 1970s following several highly publicized suicides linked to peer victimization (Olweus & Limber, 2010). Heightened media coverage of suicides related to peer victimization elicited demands for new policy and immediate action (Olweus, 1993; Olweus, 1994). Thus, Dan



Olweus, now considered the father of anti-bullying interventions (American Psychological Association, 2015) developed a universal intervention program to be implemented and systematically researched in Norwegian schools. His intervention, known as the Olweus Bullying Prevention Program (OBPP), emphasized a positive school environment, active adult involvement, and firm rules for unacceptable behavior (Olweus, 1993; Olweus, 1994; Olweus & Limber, 2010). Olweus set four goals for his intervention program: (1) to increase students', teachers', and parents' awareness and knowledge about peer victimization, (2) to develop clear rules against peer victimization, (3) to actively involve teachers and parents in program enforcement, and (4) to provide support and protection for victims (Olweus, 1994). Specific components of Olweus's program included interventions at the school, classroom, individual, and community level (Olweus & Limber, 2010). School-level components included establishing a bullying prevention committee, conducting training sessions for all staff, introducing school rules against bullying, refining the school's supervisory system, and administering questionnaires to obtain information on student-, parent-, and teacher-perceptions of bullying. Classroom-level components involved enforcing school-wide rules against bullying and holding class-level meetings to discuss bullying with students and parents. Individual-level components focused on supervising students' activities, intervening when bullying is observed, meeting with students involved in bullying and their parents, and developing individual bullying intervention plans when needed. Lastly, community-level components included involving community members in the school's bullying prevention committee, developing school-community partnerships to support the program, and spreading anti-bullying messages throughout the community (Olweus, 1994; Olweus & Limber, 2010).

The OBPP was initially implemented in a two year longitudinal study (1983 to 1985) that

assessed changes in approximately 2,500 school-aged children's (grade 4 to 7) involvement in peer victimization. Olweus's initial evaluation of his intervention program revealed an approximate 60% reduction in student self-reported levels of bullying. Additionally, schools that participated in the OBPP evaluation demonstrated decreases in students' antisocial behavior (e.g., vandalism) and improvements in school climate (e.g., student satisfaction, order and discipline, positive social relationships; Olweus, 1994). Following the initial OBPP study's promising findings, researchers conducted several large-scale studies within Norwegian schools to further evaluate the effectiveness of Olweus's intervention program. These studies demonstrated similar findings of OBPP's efficacy (Olweus & Limber, 2010). Norwegian schools that introduced the program with high fidelity showed a 33% decrease in peer victimization with no indications of displacement (i.e., peer victimization did not begin occurring in alternate environments; Olweus, 1994).

Despite encouraging findings in Norwegian efficacy trials, replication studies in the United States, Germany, Sweden, Belgium, and China have failed to find consistent peer victimization reductions after implementing Olweus's program (e.g., Bauer, Lozano, & Rivara, 2007; Bowllan, 2011; Olweus & Limber, 2010; Stevens, Bourdeaudhuij, & Van Oost, 2000 ). The most cited reason for replication failure in other countries is resistance from teachers and parents who do not view bullying as a concern either because (a) they do not believe peer victimization exists in their school, or (b) they view bullying as a rite of passage and/or a learning experience (Olweus & Limber, 2010). Other possible explanations for replication difficulty are: (1) the schools in Olweus's study were of high quality (i.e., small class size and highly trained teachers), (2) the historical context at the time (i.e., being introduced following several bullying-related suicides) may have increased motivation for adhering to the program,

and (3) recent studies have not implemented the program with high fidelity and instead modified the program to adapt to diverse schools' environments (Black, Washington, Trent, Harner, & Pollock, 2010; Flygard, Gill, & Johnsson, 2013; Olweus, 1994; Smith, Schneider, Smith, & Ananiadou, 2004).

Although Olweus is widely known as the father of school-wide anti-bullying programs, he is not the only researcher to develop and evaluate the effectiveness of universal peer victimization interventions. Several other researchers have developed programs using similar principles, such as improving school climate and implementing anti-bullying rules, to reduce school bullying (e.g., Garandeau, Poskiparta, & Salmivalli, 2014; Low, Van Ryzin, Brown, Smith, & Haggerty, 2014; Nese, Horner, Dickey, Stiller, & Tomlanovich, 2014; Roland & Midthassel, 2012). For example, the Zero program implements a zero tolerance approach to bullying. Specifically, Zero emphasizes staff development, authoritative classroom leadership, and a dual focus on prevention and intervention (Roland & Midthassel, 2012). Zero is a 16-month program that begins with a four month preparation period preceding the new school year. During the preparation period, the principal leads a project group comprised of key staff, parents, and students to teach participants key components of the Zero program (Roland & Midthassel, 2012). Zero is a slightly shorter program than OBPP (16-month and 24-month, respectively) and focuses more on direct classroom management. Research evaluating the effectiveness of the Zero program began in Norwegian schools and, after findings revealed a significant decrease in peer victimization, began to disseminate internationally with consistently positive findings (Roland and Midthassel, 2012).

The KiVa universal anti-bullying program also borrows from some of the core tenants of Olweus's program. KiVa, an acronym for *Kiusaamista Vastaa* meaning "against bullying," was

developed to address theoretical links between peer bystanders' reactions to peer victimization and the extent to which peer victimization is maintained or reduced in a school (Garandeau et al., 2014). The goal of KiVa is to teach bystanders how to convey nonacceptance of peer victimization and how to support the victim (Samivalli & Poskiparti, 2012). The KiVa program utilizes classroom teachers to introduce lessons with antibullying themes (e.g., emotions, peer relationships, group pressure) and virtual learning environments (i.e., antibullying computer game) to reinforce lessons (Samivalli & Poskiparti, 2012). In contrast to OBPP and Zero, KiVa's duration is not intended to be definitive; rather, KiVa is designed to be a consistent and permanent part of the school/classroom curriculum (Samivalli & Poskiparti, 2012). KiVa was developed by Finnish researchers and, to date, has only been evaluated in Finnish schools (Samivalli & Poskiparti, 2012). Studies evaluating KiVa in Finnish schools have shown not only a reduction in peer victimization, but also an improvement in students' school liking, academic motivation, and school performance, and a reduction in victims' internalizing behaviors and negative peer perceptions (Samivalli & Poskiparti, 2012; Williford, Elledge, Boulton, DePaolis, Little, & Salmivalli, 2013).

Although extant research indicates universal intervention programs can reduce overall rates of peer victimization when implemented with high fidelity (Juvonen & Graham, 2013), universal interventions have notable limitations. First, because universal interventions are large-scale school-wide programs, universal interventions can be financially costly and time-consuming (Black et al., 2010; Streiner, 2002). Universal interventions also require strong motivation and participation from school staff, teachers, parents and students to be implemented correctly and effectively (Olweus & Limber, 2010; Ryan & Smith, 2009). Importantly, studies evaluating universal intervention programs are difficult to conduct, often confounded by lack of

control conditions, lack of systematic procedures, and inaccurate self-reporting (Evans et al., 2014; Ryan & Smith, 2009; Smith et. al., 2004). Additionally, third-variable confounds, due to teachers' and students' increased awareness of peer victimization when intervention strategies are introduced, may skew results to show higher efficacy for universal interventions than is accurate (Merrell et al., 2008; Smith et. al., 2004).

### **Selective and Indicated Interventions for Healthy Youth**

In light of universal intervention programs' limitations, some researchers have begun evaluating efficacy and effectiveness of selective and indicated peer victimization interventions. As defined above, selective interventions are designed specifically for at-risk youth, while indicated interventions are intended for victimized youth showing early negative outcomes (Juvonen & Graham, 2014; Olweus & Limber, 2010; Pepler, 2006). The targeted population (i.e., youth at risk versus youth demonstrating negative outcomes related to peer victimization) determines whether the program is selective or indicated. Published studies evaluating selective and indicated peer victimization interventions tend to focus on one of the following four intervention strategies: (1) increasing protective factors, (2) strengthening coping skills, (3) enhancing social status, and (4) improving social skills. In the following sections, I will review studies evaluating the efficacy of selective and indicated peer victimization interventions. Programs are divided into the four common peer victimization intervention strategies; intervention type (selective versus indicated) will be specified for each reviewed intervention. Of note, peer victimization selective and indicated interventions have been evaluated only with healthy youth; these programs have not been evaluated with pediatric oncology or other chronically ill populations. Although not specific to peer victimization, researchers have developed a social skills intervention for CNS tumor patients. Following the section describing

interventions to improve victims' social skills, I will include a subsection describing interventions to improve CNS tumor patients' social skills.

**Interventions to increase protective factors.** A robust research literature documents the role of protective factors in moderating links between peer victimization and unfavorable psychosocial outcomes (e.g., Bernat et al., 2012; Borowsky et al., 2013; Brendgen et al., 2013; Catalano & Hawkins, 1996; Hemphill et al., 2014; Karlsson et al., 2014). Empirical studies generally find that victims are at decreased risk for future victimization and related behavioral/emotional problems when protective factors (e.g., warm family relationships, positive home environments, best friendship, teacher support) are in place (Bollmer et al., 2005; Bowes et al., 2010; Karlsson et al., 2014; Kendrick et al., 2012; Sapouna & Wolke, 2013). Although scholars often recommend enhancing protective factors as an indicated intervention strategy, my review revealed only one empirical study has evaluated the feasibility and utility of protective factor enhancement in reducing peer victimization. Resilience Triple P is an indicated intervention designed to decrease future victimization and emotional distress by enhancing facilitative parenting, teacher involvement and support, and friendship development (Healy & Sanders, 2014). A study examining the efficacy of Resilience Triple P showed a decrease in victims' reported levels of peer victimization and emotional distress following participation in the intervention (Healy & Sanders, 2014).

**Interventions to strengthen coping skills.** Given associations between coping strategies and the likelihood of peer victimization, another intervention strategy focuses on developing individuals' adaptive coping skills in response to peer victimization. Though many studies have suggested strengthening coping skills as a future direction for intervention research (e.g., Garnefski & Kraaij, 2015), only one study has evaluated the efficacy of a peer victimization

intervention specifically designed to improve coping skills and responses to peer victimization. This indicated intervention, The FearNot! Program, uses computerized virtual learning to teach victims effective peer victimization coping strategies (Sapouna et al., 2010). FearNot! presents victims with a virtual school populated with animated fictional students who portray bullies, victims, and bystanders. Participants are coached to respond to victimization incidents using adaptive coping skills. A study examining the effectiveness of FearNot! showed a decrease in reported levels of peer victimization and an increase in students' perceived ability to escape peer victimization at the first and fourth week following intervention (Sapouna et. al., 2010).

**Interventions to improve social skills.** Because poor social skills place children at risk for peer victimization, some intervention programs are designed to improve social skills in hopes of reducing the frequency of children's peer victimization experiences. An intervention designed by Chu and colleagues (2014) provides social skill training to improve victims' social interactions. A study evaluating the program showed reductions in peer victimization and reductions in negative behavioral and emotional responses to peer victimization in the months following intervention implementation (e.g., withdrawal, isolation, depression, and anxiety; Chu et. al., 2014). Other studies examining similar indicated interventions suggest victims experience an increase in positive friendships, communication, and assertiveness, as well as decreased isolation, withdrawal, and social inactivity following social skills training (for review, see Gresham 1985).

***Interventions to improve CNS tumor patients' social skills*** Although no peer victimization interventions have been tailored to the pediatric oncology population, social skill-building interventions have been designed to address CNS tumor patients' declined social functioning during and following cancer treatment. A recent study evaluating the efficacy of a

social skills program for 7-18 year old CNS tumor patients showed promising findings (Schulte, Bartels, & Barrera, 2014). The intervention is comprised of six sessions. Each session focuses on a specific skill (i.e., establishing friendships, cooperating, managing bullying, resolving conflict, building and demonstrating empathy, using appropriate assertiveness). To evaluate efficacy, parent, teacher, and child reports were collected pre- and post-intervention and compared to a control group. Results showed parents and teachers reported social skill improvements, such as better eye contact and increased conversation initiation, in the intervention group compared to the control group (Schulte et al., 2014). No other published studies have evaluated social skills training with the pediatric oncology population.

**Interventions to enhance social status.** Despite some promising findings for interventions focusing on enhancing protective factors and strengthening coping/social skills, some scholars have suggested that victimized children's improved social skills and responses to peer victimization may not ameliorate risk because of the social climate in which peer victimization occurs (Elledge, Cavell, Ogle, & Newgent, 2010; Wolfer & Scheithauer, 2014). Because, by definition, peer victimization is implicitly or explicitly sanctioned by peers, victims may be unable to escape the victim role without improvements to their social context (Craig, Gregus, Murphy, Faith, & Cavell, unpublished manuscript). Given the likely role of social context in maintaining peer victimization, some researchers have begun investigating interventions designed to enhance chronic victims' social status (e.g., Craig et al., unpublished manuscript; Elledge, Cavell, Ogle & Newgent, 2010; Roach, 2014; Wolfer & Scheithauer, 2014). One selective intervention strategy, the Lunch Buddy Mentoring program, was designed to improve the social status of youth at risk for chronic peer victimization (Cavell & Henrie, 2010). The Lunch Buddy Mentoring program pairs at-risk children with college student mentors who



focus on providing social support and enhancing victims' social status during twice weekly lunch time mentoring. Mentoring occurs in the presence of classmates who sit at the mentee's lunch table (Cavell & Henrie, 2010). Elledge and colleagues (2010) found that children who participated in the Lunch Buddy Mentoring program demonstrated decreased self- and teacher-reported peer victimization, development of a positive mentor/mentee relationship, and teacher and parent satisfaction with the program. In a later study, child-rated Lunch Buddy mentoring relationship quality was linked to gains in lunchtime peer relationships for chronically victimized children (Craig et al., unpublished manuscript). Another research group examined the effects of a similar school mentoring program (Roach, 2014). Roach (2014) evaluated an indicated intervention that focused on building relationships between victimized students grades 4-7 and older student mentors. Findings demonstrated an improvement in social, emotional, and academic outcomes. Additionally, results suggested an increase in students' life and school satisfaction (Roach, 2014).

### **Chapter 3**

#### **Discussion**

##### **Implications of cancer diagnosis, treatment, and survivorship on peer victimization risk factors and outcomes**

As reviewed in the cancer diagnosis, treatment, and survivorship sections, childhood cancer presents patients and their families with unique short- and long-term challenges related to medical and psychosocial adjustment. While many children adjust well to childhood cancer (Kazak et al., 2010), a number of children experience difficulties related to physical, emotional, academic, family, and social functioning (e.g., Ach et al., 2013; Ahomaki et al., 2013; Colletti et al., 2008; D'Agostino & Edelstein, 2013; Hile et al., 2014; Streisand et al., 2003; Wilson et al., 2014). Notably, many adjustment difficulties common in the pediatric oncology population are similar to those that place healthy children at risk for peer victimization. The following section will review implications of cancer diagnosis, treatment, and survivorship on pediatric cancer patients' risk of peer victimization and related adverse outcomes.

In addition to experiencing changes in physical appearance that could place them at risk for peer victimization (e.g., short stature related to craniospinal radiation, surgical scarring, cranium deformity from CNS tumor excision, chemotherapy-induced hair loss and weight gain; Feragen & Borge, 2010; Griffiths et al., 2006; Masnari et al., 2013), I assert that pediatric cancer patients may also be more susceptible to negative physical outcomes associated with peer victimization because pediatric cancer patients concurrently experience physical symptoms related to illness, treatment, and late effects. That is, pediatric cancer treatment's side effects and late effects present peer victimization risks related to both physical appearance and physical health. Furthermore, most pediatric cancer patients are immuno-compromised and highly

susceptible to infection and other illnesses during treatment (Children's Oncology Group, 2011); thus, somatic complaints and depressed immune functioning related to chronic peer victimization (Gini et al., 2009; Nixon et al., 2011; Smith et al., 2015; Vieno et al., 2015) could compound patients' already fragile health. Lastly, although no published studies have investigated pediatric cancer patients' body image compared to healthy controls, it is possible that pediatric cancer patients' awareness of physical appearance may be heightened due to on-treatment hair loss, weight loss/gain, amputations, scarring, and treatment late effects (e.g., short stature, webbed neck, radiation-related alopecia). Following from this possibility, verbal peer victimization related to physical appearance or victimization related to being different from peers could be a particularly salient predictor of patients' psychosocial maladjustment (e.g., Weingarden & Renshaw, 2015). Studies are needed to examine whether cancer patients and survivors experience heightened sensitivity to body image problems and, if so, the extent to which cancer patients' and survivors' heightened sensitivity to body image problems, emotional difficulties, and verbal peer victimization may be related.

A subset of pediatric cancer patients may also be at higher risk for peer victimization and related negative emotional outcomes due to disrupted emotion regulatory skill development that results from overprotective and preferential parenting practices during cancer treatment (Colletti et al., 2008; Hullman et al., 2010; Mullins et al., 2007). Specifically, a significant subset of pediatric cancer patients experience internalizing and/or externalizing difficulties that include depression, loneliness, stress, anxiety, and disruptive behavior (Ahomaki et al. 2015; Myers et al., 2014). Because youth who demonstrate internalizing and/or externalizing behaviors are at higher risk for peer victimization (Terranova et al., 2010; Vaillancourt et al., 2013), pediatric cancer patients' heightened emotional and behavioral distress related to cancer treatment (Levi et

al., 2000; Myers et al., 2014) could place them at markedly increased risk for peer victimization and related adverse outcomes.

Other peer victimization risks and outcomes to which pediatric cancer patients could be more susceptible include lower school involvement, worse academic functioning, and poorer academic achievement. Related to side effects and late effects of cancer treatment, pediatric cancer patients are at increased risk for academic difficulties and neurocognitive late effects involving poor attention, memory, executive functioning, and academic performance (Kadan-Lottick et al., 2010; Krawczuk-Rybak et al., 2012; Krull et al., 2013; Kunin-Batson et al., 2014; Reddick et al., 2014; Robinson et al., 2010). Further, even in the absence of neurocognitive late effects, cancer-related school absences can interfere with patients' student-teacher relationships, school involvement, and academic achievement (French et al., 2013). Given that low school engagement and poor academic achievement are linked to peer victimization risks and negative outcomes (Loukas & Pasch, 2013; Nansel et al., 2007; Strom et al., 2012), academic factors related to pediatric cancer could place pediatric patients at increased risk, with risk increasing with greater brain tissue damage and neurocognitive late effects. Further, because student-teacher relationship quality can protect victimized children from ill-effects of bullying, pediatric cancer patients with poor student-teacher relationships may be at higher risk for iatrogenic effects of peer victimization.

Finally, it is possible that negative social outcomes of peer victimization may be exacerbated for pediatric cancer patients and survivors because cancer-related disruption in age-normative academic and extracurricular activities is linked to social skill deficits and social isolation (French et al., 2013; Gotte et al., 2014; Schulte & Barrera, 2010; Wilson et al., 2014). That is, patients who are already experiencing social difficulties due to mounting school

absences, social isolation, and feeling different from peers may experience even greater social impairment following peer victimization experiences, perhaps related to resulting avoidance of social activities and lack of protective close friendships. Additionally, difficulties in family functioning (e.g., overprotective parenting, avoidant parenting, sibling conflict) common during pediatric cancer (Colletti et al., 2008; Hullman et al., 2010; Mullins et al., 2007; Streisand et al., 2003; Vrijmoet-Wiersma et al., 2010) could interact with negative social peer victimization outcomes to increase pediatric cancer patients' and survivors' social adjustment problems.

In sum, although no published studies have specifically evaluated peer victimization risk factors in the pediatric oncology population, it appears pediatric cancer patients and survivors may be at heightened risk for being bullied by peers. Risk may be especially high for youth who undergo longer, more intense cancer treatment, such as in CNS tumor patients. Pediatric cancer patients and survivors also appear at heightened risk for iatrogenic effects of peer victimization, especially if protective factors are not in place (e.g., peer support, family functioning). Needed are studies that systematically evaluate the extent to which youth with a variety of oncological illnesses are at risk for concurrent and long-term peer victimization. Additionally, interventions are warranted to mitigate potential risks and vulnerability to adverse outcomes.

### **Peer Victimization Intervention for Pediatric Oncology Population**

To recapitulate, childhood cancer presents patients and their families with unique short- and long-term challenges that can disrupt typical functioning (e.g., Moyer et al., 2012; Sato et al., 2014; Wilson et al., 2014). As outlined above, many adjustment difficulties common in the pediatric oncology population are similar to those that place healthy children at risk for peer victimization. Specifically, the CNS tumor population is at increased risk for declines in physical functioning, neurocognitive abilities, and social functioning. Thus, pediatric oncology patients,

particularly the CNS tumor population, may be at increased risk for peer victimization and in need of early intervention. In recent years, researchers have developed and evaluated universal, selective and indicated intervention programs designed to reduce peer victimization in schools and minimize negative effects related to victimization experiences (e.g., Chu et al., 2014; Elledge et al., 2010; Healy & Sanders, 2014; Roach, 2014; Roland & Midthassel, 2012; Sapouna et al., 2010; Wolfer & Scheithauer, 2014); however, these studies have only been conducted with healthy youth. The potential increased risks for and greater susceptibility to negative effects of peer victimization in the pediatric CNS tumor population elucidates the need for a peer victimization intervention program tailored to the pediatric CNS tumor population. Unknown is how existing peer victimization interventions could be conducted with CNS tumor patients/survivors and whether existing interventions would be feasible with patients who attend schools over a large catchment area.

Reviewing existing intervention literature provides a solid foundation for understanding intervention strategies that could be most effective in reducing peer victimization in a pediatric oncology population. Additionally, identifying both peer victimization interventions and social skills interventions used specifically with the CNS tumor population creates a comprehensive platform for designing a peer victimization intervention for the CNS tumor population. Because no existing peer victimization intervention for healthy youth targets all four areas of peer victimization risk (i.e., physical, emotional, academic, social/family functioning), the remainder of this manuscript details a new peer victimization intervention I created for the CNS tumor population. This new intervention is designed to specifically address risk and protective factors related to physical, emotional, academic, and social/family functioning in the CNS tumor population. In the sections below, I provide details about the recommended peer victimization

intervention and ways in which to systematically evaluate the intervention. Specifically, this manuscript (1) reviews treatment considerations in developing the intervention, (2) discusses rationale for selecting particular treatment modalities and components, and (3) provides recommendations for evaluating the intervention. Based on treatment considerations discussed in the following sections, I provide an operation manual to clearly guide future implementation of the program (See Appendix A).

### **Treatment Considerations**

#### **1: Selected population**

The selected population for this intervention will be the pediatric CNS tumor population. As detailed in above sections, initial symptoms, treatment course, and late effects related to CNS tumor treatment may lead to greater functional impairments, life disruption, and physical and emotional distress compared to symptoms and treatment for other oncological diagnoses. Further, given increased stress and long-term cognitive impairments commonly associated with CNS tumors, pediatric patients with CNS tumors may be at greatest risk for negative outcomes of peer victimization.

Given increased risks for the CNS tumor population, this intervention will target patients who are at risk by virtue of having a CNS tumor diagnosis. Further inclusion criteria will specify age and cognitive abilities. This intervention will be designed for patients who are 7- to 14-years of age. This age range targets youth who are in the developmental phase known as latency stage (Gilmore & Meersand, 2015). Theorists have suggested latency stage is the most vital stage for developing social skills (Gilmore & Meersand, 2015). Youth who undergo CNS tumor treatment during latency stage are likely to miss social opportunities (e.g., engaging in physical activities, developing peer relationships) that are afforded to same-aged healthy peers (Schulte et

al., 2014). Therefore, youth aged 7 to 14 years are most likely to need and benefit from a peer victimization intervention. This intervention will not target youth below age 7 years because younger children would likely not possess the necessary reading level and cognitive abilities needed to benefit from the intervention material. Conversely, patients above age 14 years have likely formed social skills, close friendships, academic strengths, and familial relationships that serve as protective factors, and therefore, patients above age 14 years may be less likely to benefit from the intervention. Lastly, extant literature shows peer victimization rates decline with age (i.e., later teenage years), but increase during times of transition, indicating adolescents in transitional stages (i.e., entering middle school or high school) are most in need of and will likely benefit most from a peer victimization intervention.

Another inclusion/exclusion criterion is treatment course. Because many of the physical and neurocognitive effects related to increased risks and susceptibility for peer victimization are associated with repeated cranial radiation exposure, my intervention will specifically include patients who have received both chemotherapy and cranial radiation; patients will be eligible for the intervention whether or not they have undergone surgical excision of a tumor mass.

Finally, my intervention will exclude CNS tumor patients who also have a pervasive developmental disorder or moderate to severe cognitive impairment. CNS tumor patients with a developmental or cognitive disorder will likely have limitations in comprehending the intervention modules. Additionally, added risks and psychosocial adjustment factors are potentially present in CNS tumor patients with a developmental or cognitive disorder and those added risks fall outside the scope of this intervention's strategies for reducing peer victimization and related negative outcomes in the CNS tumor population.

## **2: Type of intervention**



The next consideration in creating a peer victimization intervention for the pediatric CNS tumor population is deciding between a universal, selective, or indicated intervention program. Pragmatically, implementing a universal, community-based intervention at each patient's school would present a number of implementation barriers; a universal program requires the most time, money, and personnel efforts to introduce the program to the school, implement the intervention, and track progress (Black et al., 2010; Olweus & Limber, 2010). Given that pediatric oncology patients attend schools over a large catchment area, implementing universal peer victimization interventions at each patient's school could overburden already taxed resources for hospital-based interventionists. Additionally, universal interventions are challenging to implement with high fidelity and are difficult to evaluate because of variability between schools (Flygard et al., 2013; Merrell et al., 2008; Olweus & Limber, 2010). Similar to universal interventions, selective interventions are preventative in nature; however, selective interventions specifically target only those children who are most at risk for peer victimization. Because pediatric CNS tumor patients may be enrolled in schools over a large catchment area, targeting only patients who are at highest risk may be more cost effective and efficient than implementing a universal intervention. In contrast to universal and selective intervention strategies, an indicated intervention would target only those patients who are already being victimized and/or are showing signs of iatrogenic effects of victimization. An indicated program would miss the opportunity to prevent peer victimization, thereby allowing the possibility of long lasting peer victimization iatrogenic effects. Considering universal and indicated interventions' drawbacks and the likelihood that a selective intervention would provide the most efficient but preventative approach, I have chosen a selective intervention strategy for this program.

### **3: Time point in treatment**

Another important design decision is when in patients' treatment course the intervention will be implemented. This intervention will be introduced after the child's first chemotherapy induction phase (i.e., approximately 1 month after diagnosis). The first month after an oncology diagnosis is typically the most stressful and anxiety provoking for patients and their families (Levi et al., 2000; Myers et al., 2014). Implementing the intervention one month after diagnosis will supersede the family's initial period of heightened distress, while still being early enough in treatment that treatment course and visit frequency will be fairly consistent between patients. Because the intervention will entail a six-session module, patients' frequent and consistent clinic attendance may improve intervention fidelity and patients' ability to retain session content. Further, the intervention will focus on enhancing and maintaining coping skills, building social skills, and promoting protective factors designed to reduce patients' susceptibility to peer victimization and related negative sequelae. Thus, intervening early in CNS tumor treatment will provide patients foundational skills to prevent peer victimization throughout and after CNS tumor treatment, whereas intervening at a later point could provide more time for CNS tumor patients to develop risk factors (e.g., lowered self-esteem, social isolation, social skill deficits, coping difficulties, lack of family cohesion) for peer victimization.

#### **4: Treatment modality**

The next decision point was regarding which treatment modalities (i.e., individual vs. group vs. family and cyber-intervention vs. face-to-face) were likely to be most pragmatic and efficacious with the pediatric CNS tumor population. This intervention will include a cyber-intervention with the individual CNS tumor patient, as well as a face-to-face and cyber-intervention for the patient's parent/guardian.

For the pediatric CNS tumor population, ongoing group therapy would likely be difficult

because patients' treatment course and frequency of inpatient hospitalizations and outpatient clinic visits are widely variable. Additionally, because CNS tumor patients who are undergoing chemotherapy are immuno-compromised, there is a greater likelihood patients could be febrile and/or placed on isolation precautions that would preclude contact with other patients. In contrast to group interventions, individual sessions allow for variable meeting times and can be well-tailored to individual patients' needs; thus, this intervention will utilize individual treatment modalities rather than group treatment.

Given limited personnel resources in many hospitals (Shoknoff, 2001), this intervention will utilize cyber-components to improve efficiency and patients' access to care. Cyber interventions typically consist of electronic applications via cell phone, electronic tablet, or computer ("Technology-based Interventions," 2014). Compared to primarily face-to-face delivery, providing my multi-session intervention primarily via cyber modality will minimize providers' time expenditure and associated costs. Cyber interventions will also allow patients greater flexibility in session completion. Extant research has demonstrated that, for younger generations, interventions delivered through a cyber-source are more effective than interventions delivered in other ways, particularly if the intervention includes an educational component ("Technology-based Interventions," 2014).

A parent component (i.e., face-to-face meeting and cyber-intervention) will also be utilized in this intervention. Two face-to-face parent sessions, consecutive or concurrent with children's completion of the first and last cyber modules, will be psychoeducational and will be provided by a psychologist or trained research assistant. These sessions will be designed to inform parents of peer victimization risk and protective factors associated with their child's diagnosis, identify ways parents can reinforce lessons children learn in the cyber intervention,

and teach parents strategies to enhance their child's protective factors. Following the second face-to-face parent session, this intervention will also include a follow-up cellular phone text message component. The parent will receive a text message once per week for six weeks after the parent completes his or her second face-to-face session. Each text message will provide the parent three options of protective factors on which to focus for the week (e.g., establishing/strengthening the child's best friendship, facilitating the child's engagement in a social or extra-curricular activity). The parent will confirm receipt and participation by choosing one of the three options and sending a reply text message indicating his or her selection. Similar text messaging components have been used in interventions aimed toward improving medication adherence and smoking cessation (for review, see Pai, 2015). Overall, studies evaluating the effectiveness of text-message based interventions have demonstrated text-message interventions are effective in improving medication adherence and smoking cessation compared to no-treatment or wait-list control groups (for review, see Pai, 2015). Thus, the text component of the current intervention will be included to provide continuing family support, reinforce lessons provided during face-to-face parent sessions, and improve overall effectiveness of the intervention.

### **5: Intervention duration**

The intervention will be designed to have a flexible duration. The 6 child cyber modules will be given during patients' inpatient hospitalizations or outpatient clinic visits. Because patients' hospital/clinic visit schedules are highly variable, the only duration guideline will be that the patient and parent must receive all modules except text message follow-up within 3 months of beginning the intervention. Additional guidelines that will effect duration are: 1) the parent's first and last session must be immediately following or concurrent with the patient's first

and last cyber module, and 2) the 6 patient modules and 2 parent sessions must be given sequentially, in order (i.e., cognitive behavioral skills, social skills, and problem-solving skills).

## **6: Intervention orientation**

Another important decision point is deciding whether the intervention will focus on child-specific versus context-specific strategies. Child-specific strategies focus on skills that are within the child's control (e.g., social skills), while context-specific strategies focus on constituents of the child's environment (e.g., social status). Given the large catchment area served by most pediatric oncology facilities and limited resources that would likely prohibit school-based interventions, my intervention will focus on child-specific factors. A child-specific orientation allows the intervention to be given directly to the patient and parent within the hospital setting. The child-specific orientation will focus on psychoeducational and skill-building strategies that are largely within the control of the patient and parent.

## **7: Intervention strategies**

As reviewed in this manuscript, risk factors, protective factors, and negative outcomes associated with peer victimization can be conceptualized as falling within four categories: physical, emotional, academic, social/family. Thus, the goals for this intervention are to target each of these four areas. The child-focused cyber-intervention will be divided into 6 modules; 2 modules each will focus on cognitive-behavioral skills, social skills, and problem-solving skills. Cognitive-behavioral skill building will focus on enhancing coping skills, improving self-image, and building self-esteem. These two modules are designed to address risk and protective factors related to emotional functioning and to children's perceptions of physical appearance and functioning. The social skills modules will address conversation initiation, play engagement, and other communication skills applicable to same-aged peers. The social skills modules are

designed to address risk and protective factors related to the academic environment and to social/family functioning. Lastly, the problem-solving skills modules will identify ways to respond to bullying and how to make decisions in difficult peer situations. The problem-solving skills modules are designed to address risk and protective factors related to emotional functioning, academic environment, and social/family functioning.

Both parent face-to-face sessions will be psychoeducational. The first session will educate parents about peer victimization risks and protective factors related to CNS tumor diagnosis. The second session will inform parents about the skills taught to their child during the six cyber modules and will also review risks and protective factors presented in the first face-to-face session. Following parents' completion of the second parent session, a text component will begin. Text messages will be sent to the parent once per week for the following six weeks. These text messages will serve as reinforcement for material parents learned during face-to-face sessions. Additionally, text messages will encourage enhancement of protective factors by providing three protective factor options on which to focus for the week. The parent will select a protective factors option and confirm text message receipt by responding with the option selected. For a more detailed overview of intervention strategies, please see the operation manual (Appendix).

## **8: How to evaluate**

A pilot study is recommended to empirically evaluate this intervention. The pilot study should evaluate coping, self-esteem and peer victimization before, immediately following, and three months after intervention implementation. All treatment targets should be assessed with self-, parent-, and teacher-report, as applicable. Sample instruments are provided below. Because some children will be receiving home bound education during CNS tumor treatment,

teacher report should be collected only when the child is expected to attend school throughout some or all of the intervention and follow-up period and should only be collected at time points during which the child occasionally or regularly attends school. In the initial pilot study, I recommend treatment targets be assessed at three time points: prior to the intervention, at completion of the six-week cyber module/ two individual parent sessions, and after the six week parent text message component. Study design should include randomization to the intervention or a waitlist control so that participants who complete the intervention can be compared to CNS tumor patients who do not initially receive the intervention. A waitlist control group differs from a no-treatment control group by allowing wait-listed patients to receive the intervention at a later date, thus allowing all participants to potentially benefit from the intervention.

### **Coping Measures**

- Self-Report Coping Scale (Causey & Dubow, 1992). The Self-Report Coping Scale (SRCS) is a 34-item self-report measure of coping strategies children would use in a stressful situation. Items are rated on a 5-point scale (0 = Never, 1 = Hardly ever, 2 = Sometimes, 3 = Most of the time, 4 = Always) and comprise five domains: social support seeking, problem solving, distancing, internalizing, and externalizing (Causey & Dubow, 1992). The SRCS has demonstrated strong factor structure, adequate internal consistency ( subscale  $\alpha$ s = .69-.82), and good two-week test-retest reliability ( $r = .58-.78$ ) (Causey & Dubow, 1992). Kochenderfer-Ladd and Skinner (2002) modified the SRCS to assess children's coping by asking children to rate each coping strategy in response to the vignette, "When I have a problem with a kid at school, I..." To evaluate the current peer victimization intervention with pediatric CNS tumor patients, I recommend modifying the SRCS by asking children to rate each coping

strategy in response to the vignette, “When other kids at school bully me (e.g., hit or kick me, steal my belongings, call me mean names, spread rumors about me, not let me play with them, or purposely not invite me to things), I...”

- Child Observed Coping Scale (Kronenberger, 1993). The Child Observed Coping Scale (COCS) is a 57-item parent-report measure of children’s coping strategies. Parents rate on a 0 (= Not at all) to 2 (= Often) scale how often their child uses various strategies to cope with a stressor, allowing researchers to specify the specific stressor of interest (Kronenberger et al., 1996). The COCS assesses child coping across five domains that have previously been found common in the pediatric oncology population: problem solving, cognitive restructuring, social support, religiosity, and avoidance (Kronenberger et al., 1996). Studies have shown the COCS to have good internal consistency (subscale  $\alpha$ s > .60; Kronenberger, 1993) and convergent validity with children’s self-reported coping (Kronenberger et al., 1996). For the purposes of evaluating this peer victimization intervention, I recommend parents respond to the vignette, “When my child is bullied by peers or experiences peer conflict, he/she...”
- Adapted teacher-report of child’s coping. Because no standardized teacher-report measure of child coping currently exists, I recommend adapting the COCS (Kronenberger, 1993) for use with teachers by providing the vignette, “When [name of student] is bullied or experiences peer conflict, he/she...”

### **Self-esteem Measures**

- Rosenberg Self-Esteem Scale (Rosenberg, 1965). The Rosenberg Self-Esteem Scale (RSES) is a widely used 10-item scale designed to assess children’s self-reported



global self-worth/self-esteem by measuring both positive and negative feelings about the self. Children respond to items using a 4-point Likert scale (1 = Strongly agree, 4 = Strongly disagree). The RSES has demonstrated strong unidimensional factor structure and predictive validity (Gray-Little, Williams, & Hancock, 1997) and has been used with children as young as 9 years of age (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002).

### **Peer Victimization Measures**

- The Way Kids Are (Elledge, Cavell, Ogle, Malcolm et al., 2010). The Way Kids Are is a 9-item self-report measure adapted from the School Experiences Questionnaire (Kochenderfer-Ladd, 2004). This adapted version has demonstrated good internal consistency in previous studies ( $\alpha = .82 - .86$ ; Elledge, Cavell, Ogle, Malcolm et al., 2010; Elledge, Cavell, Ogle, & Newgent, 2010; Faith et al., 2015). Verbal, physical, and relational victimization are assessed, each by 3 items rated on a 3-point scale (0 = Never; 1 = Sometimes; 2 = A lot).
- Teacher-Report of Victimization (Faith et al., 2015). The Teacher-Report of Victimization is comprised of a 3-item scale on which teachers rate children on physical, verbal, and relational peer victimization (1= Not at all like this child, 5= Exactly like this child). This scale has demonstrated adequate internal consistency and test-retest reliability in a previous study (Faith et al., 2015).
- Parent-Report of Peer Victimization (Adams, Fredstrom, Duncan, Holleb, & Bishop, 2014). The Parent-Report of Peer Victimization (PRPV) scale is a 12-item parent-report measure assessing parents' perceptions of children's overt and indirect peer victimization experiences. Parents report how often their child experiences each type

of victimization (i.e., overt versus indirect) using a 7-point scale (1 = Never happens to my child, 7 = Happens to my child almost every day). Subscales of the PRPV have demonstrated good internal consistency ( $\alpha = .78-.95$ ) and convergent validity with child-reports of peer victimization (Adams et al., 2014).

## **Chapter 4**

### **Suggestions for Future Research**

Although a number of studies have evaluated adverse psychosocial outcomes of cancer, no studies have specifically reported peer victimization, peer rejection, or peer acceptance among children with cancer and cancer survivors. Given duration of cancer treatment and increased rates of survivorship, longitudinal studies assessing peer victimization incidence and risk factors over time may be particularly important to identify time points in age development or cancer treatment that may increase peer victimization occurrence and adverse outcomes. Further, peer victimization predictors, risk factors, and protective factors in the pediatric oncology population have yet to be systematically evaluated concurrently or over time. Given that pediatric cancer-related life disruption could interfere with children's ability to master developmentally normative tasks (e.g., establishing friendships, building distress tolerance), patients' age at diagnosis, diagnosis, and treatment course should be evaluated as potential predictors of pediatric cancer survivors' peer victimization experiences.

Perhaps not surprising, peer victimization interventions tailored specifically to the pediatric oncology population are also lacking from published literature. Most peer victimization interventions have been designed to target entire school populations and focus on decreasing levels of peer victimization among healthy youth. Unknown is the extent to which existing universal interventions could be feasibly delivered over the large catchment area typically served by pediatric oncology treatment centers. Feasibility, efficacy, and effectiveness trials are needed to determine whether existing universal interventions can ameliorate pediatric cancer survivors' peer victimization risk and whether such interventions can be modified in such a way that allows for oversight of a large catchment area.

Another direction for future research is to evaluate existing selective or indicated interventions with the pediatric oncology population. An intervention designed for healthy youth could be tailored to the pediatric oncology population, such as implementing the Lunch Buddy Mentoring program specifically for children with cancer, or providing the FearNot! intervention in the hospital to pediatric oncology patients. Alternatively, researchers could tailor existing selective or indicated interventions to the pediatric oncology population to improve patients' access and ability to complete intervention tasks. For example, researchers could consider using cyber modules that can be delivered easily in a hospital setting, tailoring vignettes to cancer-relevant peer victimization, and/or altering timing/duration of the intervention to be consistent with medical regimens.

Currently, no peer victimization interventions have been evaluated for the pediatric oncology population; however, researchers have evaluated interventions designed to target other areas of pediatric oncology patients' social functioning. Given social skill deficits related to CNS tumor diagnosis and treatment, one pilot and follow-up study was designed to evaluate efficacy of a social skills program for CNS tumor patients (Schulte et al., 2014). Given promising findings from the initial pilot study (Schulte et al., 2014), an interesting question is whether the social skills intervention could serve as a stand alone prevention tool for peer victimization and, if so, at what point in CNS tumor treatment the intervention yields greatest gains.

Finally, existing research literature often cites enhancing peer victimization protective factors as an effective strategy to mitigate bullying incidence and iatrogenic effects; however, no published studies have empirically evaluated the effect of protective factor enhancement on reducing peer victimization and adverse outcomes. Perhaps salient protective factors (e.g., increased family cohesion, supportive school environment, strong peer relationships) in the

context of pediatric cancer impacts peer victimization incidence and risk factors. Therefore, studies examining the effect of enhancing protective factors, especially for pediatric oncology patients, could substantially improve our ability to prevent peer victimization and to intervene with chronically bullied healthy youth and pediatric oncology patients.

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Appendix A

**Peer Victimization Intervention for CNS  
Tumor Patients**

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### **Introduction: Purpose of Intervention**

The Peer Victimization Intervention for CNS Tumor Patients is a manualized peer victimization intervention that targets children and adolescents with central nervous system (CNS) tumors and their parents. The intervention includes two face-to-face parent sessions, six patient cyber-modules, and six weeks of follow-up parent text messages. Given CNS tumor patients' increased likelihood for peer victimization and susceptibility to iatrogenic effects of peer victimization, the purpose of this intervention is to reduce risk and enhance protective factors to mitigate peer victimization and adverse outcomes for pediatric CNS tumor patients.

## **Introduction: Overview of Intervention Content**

### **Parent Face-to-Face Sessions**

#### **Session 1:**

- Define peer victimization and discuss common outcomes
- Provide psychoeducation about peer victimization risk factors, including risks specific to the CNS tumor population
- Provide psychoeducation about protective factors for peer victimization

#### **Session 2:**

- Review peer victimization outcomes, risks, and protective factors for pediatric CNS tumor patients
- Provide psychoeducation and problem solving about ways in which to mitigate risk and enhance protective factors for the targeted patient.

### **Patient Cybermodules**

#### **Modules 1 & 2:**

- Teach cognitive-behavioral coping skills
- Practice using cognitive-behavioral coping skills

#### **Modules 3 & 4:**

- Teach social skills
- Practice using social skills

#### **Modules 5 & 6:**

- Teach problem-solving skills
- Practice using problem-solving skills

### **Follow-up Parent Text Messages**

#### **Weeks 1-6:**

- Provide weekly text messages that present parents three options to enhance their child's protective factors
- Ask parent to send response text messages selecting one of the three options presented

**Introduction: Participant Criteria**

- \_\_\_ CNS tumor diagnosis
- \_\_\_ At least 6 weeks following CNS tumor diagnosis and after completion of chemotherapy induction
- \_\_\_ Patient age 7-13 years
- \_\_\_ Medical treatment plan includes both cranial radiation and chemotherapy (may or may not include surgical excision of tumor)
- \_\_\_ Neither the patient nor the parent has a pervasive developmental disorder or moderate to severe cognitive impairment

### **Introduction: Implementation Timing and Resources**

-Introduced after the child's first chemotherapy induction phase (i.e., approximately 1 month after diagnosis)

-Presented during patients' inpatient hospitalization/s or outpatient clinic visits

-Duration guidelines:

- 1.) Patient and parent must receive all modules/sessions except follow-up text messages within three months of beginning intervention
- 2.) Parent's first and last face-to-face session must be completed consecutively or concurrently with the patient's first and last cybermodules
- 3.) Six patient cybermodules and two parent sessions must be given in designated order

-Six patient cybermodules will require an electronic tablet or laptop/desktop computer for completion

-Follow-up text messages will be sent to parent's cellular phone

### **Intervention Protocol: Parent Session 1**

\*Prior to beginning intervention protocols, parent informed consent and child assent should include verification that the child will have access to an electronic tablet or laptop computer to complete cybermodules. Parent informed consent should also include verification that the parent will have access to a cellular phone throughout the six weeks following cybermodule and face-to-face session completion.

-Face-to-face parent session should be conducted by a licensed mental healthcare provider or trainee who is supervised by a licensed mental healthcare provider (e.g., predoctoral intern).

-Goals of parent session 1:

- 1.) Discuss peer victimization
  - Define peer victimization and subtypes
  - Discuss parents' perceptions of child's peer victimization experiences
  - Review physical, emotional, academic, and social/family outcomes typically associated with chronic peer victimization
- 2.) Review peer victimization risk factors that are likely heightened for pediatric CNS tumor patients
  - Physical risk factors
  - Emotional risk factors
  - Academic risk factors
  - Social/family risk factors
- 3.) Provide psychoeducation about factors that protect children from peer victimization and/or from negative outcomes associated with peer victimization
  - Physical protective factors
  - Emotional protective factors
  - Academic protective factors
  - Social/family protective factors



## **Intervention Protocol: Parent Session 2**

-Face-to-face parent sessions should be conducted by a licensed mental healthcare provider or supervised trainee (e.g., predoctoral intern)

-Goals of parent session 2:

- 1.) Review information presented in “Parent Session 1”
  - Peer victimization definition
  - Negative outcomes associated with chronic peer victimization
  - Peer victimization risk factors
  - Peer victimization protective factors
- 2.) Provide psychoeducation and problem solving about ways in which to mitigate risk and enhance protective factors
  - Provide concrete examples of ways in which to enhance protective factors, providing further elaboration based on applicability to the child:
    - Enhancing coping
      - Diaphragmatic breathing
      - Muscle relaxation
      - Modeling appropriate problem-solving and support seeking to identify strategies that could decrease peer victimization and enhance other protective factors
    - Enhancing family/home protective factors
      - At least thirty minutes of protected, enjoyable time with parent per week
      - Weekly check-ins about peer relationships
      - Weekly family activity
    - Enhancing family rituals to improve quality of time spent together as a family (e.g., mealtimes)
      - Maintain normal routines and behavioral expectations at home (e.g., household chores) and during inpatient hospitalizations (e.g., saying “please” and “thank you,” sleep schedules, expectations for autonomous self-care), as developmentally and medically appropriate
      - Model appropriate assertiveness for child and have explicit conversations about differences between passivity, assertiveness, and aggression
      - Encourage emotional labeling, empathy, appropriate conflict resolution, and mutual respect during sibling conflict (providing coaching when necessary but allowing children opportunities to learn emotion regulation and conflict resolution via sibling interactions)
    - Enhancing school and social adjustment
      - At least thirty minutes of play/conversation time with same-aged peer per week

- At least thirty minutes of extracurricular activity per week (problem-solve flexible ways to remain involved throughout cancer treatment)
- Weekly teacher-patient feedback on school assignments and student-teacher relationship quality

## **Intervention Protocols: Patient Modules 1 & 2**

\*Prior to beginning intervention protocols, parent informed consent and child assent should include verification that the child will have access to an electronic tablet or laptop computer to complete cybermodules. Parent informed consent should also include verification that the parent will have access to a cellular phone throughout the six weeks following cybermodule and face-to-face session completion.

### **Module 1—Cognitive-behavioral skill building**

-Goals of module 1: Enhance coping skills, strengthen and improve self-image, increase self-esteem

-Intervention strategies:

- Coping skill instruction

  - Diaphragmatic breathing

  - Muscle relaxation

  - Problem-solving

  - Social/family support seeking

- Self-image intervention

  - Identify physical and nonphysical components of self-image

  - Identify personal characteristics about which parents, siblings, teachers/coaches, and/or peers might be proud of the child

  - Identify personal characteristics about which the child feels proud

- Self-esteem intervention

  - Discuss internal and external loci of control, emphasizing that individuals' perceptions of control can differ based on content area

  - Promote self-efficacy by facilitating identification of personal characteristics, behaviors, and/or relationships over which the child perceives an internal locus of control

  - Assist in goal-setting to help child identify personal characteristics, behaviors, and/or relationships he or she would like to strengthen

    - \*Note: Child can earn points through participation in goal-setting during this module. Points can be exchanged for prizes or privileges on which the child, clinician, and parent agree

### **Module 2—Cognitive-behavioral skill practice**

-Goals of module 2: Practice coping skills learned in module 1 and facilitate self-image, self-efficacy, and self-esteem enhancement

\*Note: Children can earn points through participation in this module. Points can be exchanged for prizes or privileges on which the child, clinician, and parent agree

-Intervention strategies:

- Ask child to identify a time during the previous week when the child felt especially efficacious and/or noticed a positive attribute and/or felt proud (child can earn points based on number of responses they provide).

- Ask the child to identify steps he or she took since the last cybermodule to strengthen

personal characteristics, behaviors, and/or relationships (child can earn points based on number of responses they provide)

-Present video vignettes in which animated characters (ages 7-12) or actors (ages 13-18) experience peer victimization

-Child will be asked to identify ways in which the character could improve coping, then will select additional coping strategies in which they would like the character/actor to engage.

-The child will be asked to practice the identified coping skill/s with the character/actor, as appropriate, then will view a continuation of the video in which the character/actor implements the child's selected coping skill and experiences natural consequences of that coping skill.

## **Intervention Protocols: Patient Modules 3 & 4**

### **Module 3—Social skill building**

-Goals of module 3: Enhance communication skills, increase social interactions

-Psychoeducational targets:

-Communication skills

-Approaching/greeting peers

-Maintaining conversation/communication skills

-How to avoid interrupting

- Taking turns during conversations

-Reading social cues

-Using appropriate assertiveness

-Reading and displaying body language

-Generating age appropriate topics of discussion

-Engaging in play

-Reading social cues

-Compromising

-Sharing material items, thoughts, and feelings

- Examples of age normative activities in which to engage with peers

-Facilitate in child identifying activities in which he/she could engage with peers

-Encourage talking to caregivers about peer activities

-Responding to bullying

-Define bullying

-Provide examples of physical, behavioral, verbal, relational, and cyber bullying

-Walking away from and ignoring the bully

-Refraining from retaliation

-Seeking support from teachers, peers, and/or a trusted adult

-Seeking peer support

-Choosing friends

-Facilitate helping child create concrete plan for practicing social skills and for keeping a written record of practice over the coming week

\*Note: Child can earn points through participation in goal-setting during this module.

Points can be exchanged for prizes or privileges on which the child, clinician, and parent agree

### **Module 4—Social skill practice**

Goals of module 2: Practice communications skills learned in module 3

\*Note: Children can earn points through participation in this module. Points can be exchanged for prizes or privileges on which the child, clinician, and parent agree

Intervention strategies:

-Ask child to identify a time during the previous week during which the child initiated conversation and/or engaged in play with a same-aged peer (child can earn points based on number of responses they provide)

- Present video vignettes in which animated characters (ages 7-12 years) or actors (ages 13-18 years) experience peer victimization
  - Child will be asked to identify ways in which the character could improve social interactions, then will select additional social skills in which they would like the character/actor to engage
  - Child will be asked to practice the identified social skill/s with the character/actor, as appropriate, then will view a continuation of the video in which the character/actor implements the child's selected social skill and experiences natural consequences of that social skill

## **Intervention Protocols: Patient Modules 5 & 6**

### **Module 5—Problem-solving skill building**

Goals of module 3: Enhance problem-solving skills, provide additional instruction on how to respond to bullying

Intervention strategies:

- Problem-solving instruction
  - Identifying the problem
  - Identifying possible solutions
  - Weighing pros/cons of possible solutions
    - Peer/family support seeking
    - Creating pro/con lists
    - Thinking about who could be affected
  - Choosing a solution
  - Monitoring outcomes
  - Brainstorming new solutions, if necessary
- Responding to bullying instruction
  - Appropriate verbal responses to bullying
  - Appropriate nonverbal responses to bullying
  - Appropriate social/family support seeking responses to bullying

### **Module 6—Problem-solving skill practice**

Goals of module 6: Practice problem-solving skills learned in module 5 and facilitate decision-making about how to respond to bullies

\*Note: Children can earn points through participation in this module. Points can be exchanged for prizes or privileges on which the child, clinician, and parent agree

Intervention strategies:

- Ask child to identify a time in the past in which the child was involved in or directly observed a bullying incident (child can earn points based on number of responses they provide)
- Module will present a list of possible steps a victim could take in response to a bullying incident. The list will include appropriate (e.g., ignoring) and inappropriate (e.g., hitting) responses. Ask child to choose (from the list) the steps he/she would take to respond to the bullying incident he/she identified (child can earn points based on number of correct responses they provide)
- Present video vignettes in which animated characters (ages 7-12) or actors (ages 13-18) experience peer victimization
  - Child will be asked to identify ways in which the character could respond to the peer victimization, then will select additional problem-solving strategies in which they would like the character/actor to engage.
  - The child will be asked to practice the identified problem-solving skill/s with the character/actor, as appropriate, then will view a continuation of the video in which the character/actor implements the child's selected problem-solving skill and experiences natural consequences of that skill.

### **Intervention Protocols: Follow-up Text Messages**

- Parents will be sent automated weekly text messages for six weeks.
- Each week, text message will present the parent three options to enhance their child's protective factors.
- Ask parent to send response text messages selecting one of the three options presented.
- Text messages will read as follows:

**Week 1:** Practice coping skills with your child at least three times this week. Choose one of these and respond with your choice:

- 1.) Deep breathing
- 2.) Muscle relaxation
- 3.) Talk about a time when you have had to solve a problem with a peer **AND/OR** you had to get help to solve a problem with a peer. Then, talk to your child about a time he/she had to solve a problem or get help.

**Week 2:** This week will focus on strengthening your relationship with your child. Choose one of these and respond with your choice:

- 1.) Talk to your child about 3 things he/she would like to accomplish this week (e.g., finish homework, go for walk, call friend) and talk about how you could help your child reach those goals.
- 2.) At least 3 times this week, talk about how your child is feeling about an event that is happy or upsetting.
- 3.) Check-in with your child at least twice this week to talk about peer relationships and how things are going at school.

**Week 3:** This week will focus on social activities. Choose one of the options below and help your child complete the activity for at least 30 minutes. Respond with your choice:

- 1.) Extracurricular activity with peers
- 2.) Play-time with a best friend
- 3.) Try to make a new friend by going to a new playground, joining a new club, visiting the hospital play room, or some other activity where your child can meet new people

**Week 4:** This week will focus on family activities. Set aside at least 30 minutes for this activity. Choose one of these and respond with your choice:

- 1.) Fun activity with a parent (child chooses)
- 2.) Fun activity with a sibling (children agree on activity)
- 3.) Talk to your child about a family routine he/she feels is important or helpful (e.g., bedtime routine, family pizza night). Then, talk about other routines that could be helpful (e.g., starting a weekly board game night, improving morning routines)



**Week 5:** This week will focus on school. Choose one of these and respond with your choice:

- 1.) Arrange parent-teacher meeting to review your child's grades and relationships with teachers and peers
- 2.) Arrange tutoring session with homebound teacher or other tutor
- 3.) Spend 30 minutes with your child reviewing school work

**Week 6:** This week, talk to your child about how to respond to bullies. Examples of bullying include name calling, hitting, leaving someone out of a birthday party, and spreading rumors. Choose one of these and respond with your choice:

- 1.) Make up a story about your child seeing someone get bullied and talk about how your child would respond
- 2.) Make up a story about your child being bullied and talk about how your child would respond
- 3.) Talk to your child about bullying he/she has experienced and how your child could handle the situation differently if it happened again

**BIOGRAPHICAL SKETCH**

Tahnae R'shelle Tarkenton  
TahnaeRT@uwmail.com

**EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
The University of Texas at Austin	B.A.	2011	Psychology
The University of Texas Southwestern School of Health Professions	M.C.R.C.	2015	Rehabilitation Counseling

**Clinical Experience**

- 2015 Clinical Internship, Pediatric Psychology/Oncology Emphasis  
Children's Health – Children's Medical Center
- 2014-2015 Neuropsychology Internship, Adult Developmental Emphasis  
University Rehabilitation Services

**Presentations and Peer-Reviewed Publications**

- 2015 Faith, M. A., Reed, G., Heppner, C. E., Hamil, L., **Tarkenton, T. R.** & Donewar, C. (2015). Bullying in medically fragile youth: Risks, protective factors, and recommendations for medical providers. *Journal of Developmental and Behavioral Pediatrics*, 36(4), 385-301.
- 2015 McDonald, W. C., **Tarkenton, T. R.**, & Faith, M. A. (2015). *Cultural Differences in Parents' Beliefs about Children's Emotions in the Pediatric Hematology/Oncology Population*. Received Honorable Mention at the 2015 UT Southwestern Graduate Student Organization Poster Session; Dallas, Texas.

**Research Experience**

- 2014-2015 Research Assistant and Project Manager  
Pediatric Psychology/Oncology Emphasis  
Project Title: *Familial beliefs and coping among families of children with oncological or hematological illnesses*

**Related Positions and Employment**

- 2014-2015 Academic Skills Coach  
Coaching For Academic Success  
Matthew Housson, Ph.D. & Associates
- 2012-2013 Emergency Department Scribe  
PhysAssists, Inc.  
Texas Health Resources- Dallas Presbyterian Hospital

**Professional Memberships**

- 2015 American Psychological Association, Graduate Student Affiliate
- 2015 American Psychological Association of Graduate Students
- 2015 Division 54 of the American Psychological Association, Society of Pediatric Psychology
- 2015 Division 53 of the American Psychological Association, Society of Clinical Child & Adolescent Psychology