

More Than Just SeriousFun:  
The Impact of Camp on Resilience for Campers with Serious Illness  
2014-2015 Report

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## Executive Summary

In this report, we provide an overview of findings from a multi-year collaboration between SeriousFun Children's Network and the Yale Child Study Center, specifically focusing on findings from the 2014-2015 residential camp study. During summer 2014, 645 parents/caregivers attending one of 5 camps in the SeriousFun Children's Network completed surveys prior to their child's camp experience, reporting on a range of camper attributes and outcomes. One month and six months after camp, families were invited to participate in follow-up surveys. Response rates were significantly increased from previous years with 76% of invited families participating in the study before camp, 57% continuing at one-month post-camp, and 47% continuing six-months post-camp. Results revealed that after attending a SeriousFun residential camp, parents and caregivers reported changes in their children on a number of positive attributes, including increased interest in social activities, confidence, self-esteem, and a sense of belonging. Parents and caregivers also reported that campers experienced significant increases in adaptability, positive attitude toward taking medication, positive attitude toward medical personnel, and relationship skills as well as significant decreases in problems with psychosocial functioning. Many of these changes persisted six months after camp. Analyses revealed that camper relationship skills one month after camp were an important predictor of improved outcomes for campers, indicating that fostering friendships and boosting relationship skills at camp may be an important mechanism for maximizing the benefit of the camp experience. Implications and next steps are discussed.

## **More Than Just SeriousFun: The Impact of Camp on Resilience for Campers with Serious Illness**

Paul Newman’s dream in founding The Hole in the Wall Gang Camp in Connecticut was to provide children living with serious medical illness a chance to kick back and as he put it, “raise a little hell.” Countless stories have emerged from The Hole in the Wall Gang Camp and other camps in the SeriousFun Children’s Network that, for many children, this dream has become a reality. The growing number of camps in the SeriousFun Children’s Network share a philosophy and adhere to a common set of program and medical operating criteria to provide children living with medical illness a high-quality residential camp. Over the years, stories from families have suggested that SeriousFun Camps may provide children with much more than just fun. Campers and families consistently share that camp provides campers with a valuable opportunity to make friends with peers who understand the challenges they face. Along with anecdotal evidence, the research base supporting the relationship between attending camp and positive outcomes for children is steadily increasing. A growing body of evidence suggests that not only does camp afford children a positive respite from the daily reminders of their illnesses, camp may also be building children’s capacities for resilience.

### **Theoretical Foundations**

A child’s capacities for resilience – the ability to “bend, but not break” or even to grow in the face of adversity – are critical for positive growth and development (Masten & Gewirtz, 2006). Resilience plays an especially important role in the lives of SeriousFun campers and their families as children and adolescents living with serious medical illness experience challenges related to illness and treatment that can lead to serious stress and psychosocial difficulties (Eilertsen, Rannestad, Indredavik, & Vik, 2011; Ishibashi, 2001; Martinez, Carter, & Legato, 2011). Resilience can be measured in many ways and thus, in the present study, we chose to look for change in a range of variables related to positive adaptation before and after camp, including coping strategies and happiness as well as psychosocial and physical quality of life.

Importantly, we also examined variables related to social support (e.g., relationship-related capacities, friendship satisfaction, loneliness, and family social support) because social support has been identified as one of the strongest predictors of resilience (Torres, Southwick, & Mayes, 2011).

Studies have shown that having social support (i.e., having at least one reciprocated friendship) relates to a range of positive outcomes, including enhanced physical health and immune functioning (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997), higher grades in elementary school and middle school (Vaquera & Kao, 2008; Wentzel, Barry, & Caldwell, 2004) better motivation and engagement in school (Wentzel, 2005) and easier adjustment across the transitions to middle school, high school, and college (Kingery, Erdley, & Marshall, 2011; Masten, Herbers, Cutuli, & Lfavor, 2008; Pittman & Richmond, 2010). Strong social support is also related to higher self-esteem, self-confidence, positive coping abilities, and lower rates of depression and PTSD (Cohen et al., 1997; Im & Kim, 2012; King, King, Vogt, Knight, & Samper, 2006).

For children living with serious illness, developing friendships and strong social support can be especially challenging. The relationship skills necessary to create and maintain friendships are developed over time through interactions with and modeling by family members, as well as through practice interacting in social situations with peers (Rubin et al., 2006). Especially important for building strong friendships is the opportunity to interact with peers with shared experiences. Time spent ill or receiving treatment can lead to frequent absences from school and missed opportunities to interact with peers (Ishibashi, 2001). These missed opportunities can lead to feelings of loneliness and isolation (Moody, Meyer, Mancuso, Charlson, & Robbins, 2006; Spirito et al., 1990). This is concerning because social isolation is linked to higher levels of depression and low self-esteem (Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007). A lack of social support has also been linked to compromised physical health, progression of disease, and reduced length of life (Rozanski, Blumenthal, & Kaplan, 1999; Sapolsky, 2004), indicating that social isolation may be especially dangerous for children living with serious illness.

Friendships and social support play an especially important role in the lives of children and adolescents living with serious illness. Studies including children living with illness (e.g., cancer, atopic dermatitis, Duchenne muscular dystrophy) have found that social support (friendships) relates to self-reported resilience (Kim & Yoo, 2010), positive coping abilities, parent-rated psychological adjustment, and the ability to cope with family stress (Herzer, Umfress, Aljadeff, Ghai, & Zakowski, 2009), even after controlling for demographic variables, such as age, gender, religion, number of siblings, and duration and type of illness. Studies have also found that children who have a strong network of support are better able to cope with illness. Together, these findings highlight the critical role that social support plays in helping children and adolescents cope with the stresses associated with serious medical illness. Finding ways to help children living with serious illness enhance relationship skills may help them not only develop friendships and build networks of social support, but also to better cope with illness and illness-related challenges.

Attending a SeriousFun residential camp provides a unique opportunity for children and adolescents living with illness. By bringing children and adolescents with similar experiences together, campers are given the opportunity to interact with peers who can understand their own experiences with illness. Additionally, camp staff foster an atmosphere of social connectedness among campers throughout the camp day (e.g., during activities, and meal times) and in cabin chat rituals at bedtime. In the present study, we consider the relationships formed at camp as one of the mechanisms through which camp may promote positive camper outcomes. We also examine the camp experience and a range of camper outcomes related to positive adaptation and resilience before and after camp (one month and six months following camp).

## **Background of the Current Study**

The current study builds upon a multi-year collaboration between SeriousFun Children's Network and the Yale Child Study Center, beginning with a pilot study in 2010. Over the last five years, a series of studies has been conducted to examine the association between camp participation and camper outcomes.

A summary of studies spanning 2010-2015 is presented in Table 1.

**Table 1. A summary of camp studies conducted in collaboration between the SeriousFun Children’s Network and the Yale Child Study Center.**

| Year      | Method                                    | Timeline |                |                 | Participants     | # of camps | # of participants  |
|-----------|---|----------|----------------|-----------------|------------------|------------|--|
|           |   | Pre      | Post (1 month) | Post (6 months) |                  |            |  |
| 2010-2011 | surveys (pre) and phone interviews (post) | X        | X              |                 | parents          | 3          | 172 caregivers   |
| 2011-2012 | Surveys (pre) and phone interviews (post) | X        | X              |                 | parents          | 6          | 141 caregivers   |
| 2012-2013 | surveys                                   | X        | X              | X               | parents, campers | 14         | 919/764 pre-camp*, 252/188 one-month post, 152/104 six-months post                             |
| 2013-2014 | surveys                                   | X        | X              | X               | parents, campers | 12         | 606/458 pre-camp*, 179/138 one-month post, 93/62 six-months post                               |
| 2014-2015 | phone surveys                             | X        | X              | X               | parents          | 5          | 645 pre-camp, 481 one-month post, 456 six-months post with 402 completing all three timepoints |

\*Parents/campers. The number of parents/caregivers who responded are represented by the first number and the number of campers who responded are represented by the second number.

In early studies (2010-2011 and 2011-2012), data was collected at one time point to learn about the outcomes families observed in campers following camp. Surveys asking questions about children’s temperament, capacities for resilience, and quality of life were piloted before camp in tandem with in-depth phone interviews conducted after camp. In their responses, parents and caregivers highlighted a myriad of factors as important to children’s camp experiences, including relationships with peers, relationships with older children, and relationships with counselors and adults at camp. Interactions with peers, as well as with older children and adults, provided opportunities for campers to feel connected to networks of social

support. Moreover, parents shared that children viewed older campers and counselors as role models. Having role models gave children an opportunity to see others coping with and adapting to many of the same struggles they faced and helped them to think about what they may encounter as they grow older. Role models also provided children with models for how to cope with the stresses and challenges related to serious medical illness. For some campers, these relationships provided hope for the future, more appreciation for their own experiences, and increased gratitude and sympathy for those who were suffering from more severe illnesses. These preliminary findings closely aligned with existing research on the importance of social support for positive adaptation and resilience – the ability to thrive in the face of adversity (Masten & Gewirtz, 2006).

In the studies that followed (2012-2013 and 2013-2014), campers and parents/caregivers across the SeriousFun Children's Network were surveyed prior to attending camp as well as at one-month and six-months post camp with the aim of intentionally exploring the social connections made at camp as a possible mechanism leading to changes in camp-related outcomes, positive adaptation, and resilience. Results from both the 2012-2013 and 2013-2014 surveys revealed that after attending a SeriousFun residential camp, parents and caregivers reported changes in a number of positive attributes in their children, including confidence, independence, self-esteem, and increased interest in social activities. These changes were apparent one month after camp and persisted at six months following camp. Parents/caregivers also reported a statistically significant decrease in their children's stress/PTSD symptoms related to illness, as well as a significant decrease in problems with psychosocial functioning. In the 2012-2013 surveys, these decreases were apparent one-month after camp, but returned to pre-camp levels six-months after camp. In the 2013-2014 surveys, children's psychosocial difficulties were significantly lower one-month after camp in comparison to pre-camp and these drops persisted six months after camp. The friendships and social connections formed at camp emerged as an important part of the camp experience with 98% of campers each year reporting making at least one new friend at camp and approximately 60% of campers remaining

in touch with camp friends six months after returning home from camp. Findings from these studies pointed to the relationship between the friendships and connections created at camp and a range of positive outcomes for campers. A limitation of these studies is that response rates represented a small percentage of campers across the SeriousFun Children's Network (less than 30% of parents and caregivers surveyed pre-camp and less than 3% six-months after camp). In order to explore how widespread these findings are across campers in the SeriousFun Children's Network, the aim of the 2014-2015 study was to target a smaller number of camps with an increased emphasis on improving the response rate using methods that facilitated participation (i.e., parents and caregivers were given the choice to complete surveys by phone, email, or mail). In the next sections, we detail the methods and findings from the 2014-2015 camp study.

## Methods

**Participants and Procedure.** Five camps in the SeriousFun Children's Network were selected to participate in the 2014-2015 camp study. In contrast to the previous year's study, parents and caregivers from five camps were invited to participate so that emphasis could be placed on increasing the response rate within a smaller sample. Specifically, participants included parents/caregivers from 3 camps in the United States (The Hole in the Wall Gang Camp in Connecticut, Flying Horse Farms in Ohio, and The Painted Turtle in California) and 2 camps in Europe (Dynamo Camp in Italy and Bátor Tábó in Hungary). Each camp selected two week-long camp sessions to target for participation in the study. As part of the camp enrollment process, a total of 850 parents/caregivers with campers participating in the selected sessions were invited to participate in surveys at three time points (prior to camp, one month following camp, and six months after camp). Families who agreed to participate were contacted via email and phone to remind them to complete the surveys.

**Measures.** Surveys included a combination of questions created specifically for the camp outcomes study that were informed from previous years' interviews, as well as previously validated measures. Items



included on the survey related to children's ability to make friends and connect with others, coping and adaptation, capacities for resilience (e.g., relationship skills and emotional reactivity), psychosocial difficulties, and family social support. Items asked on the pre-camp survey were repeated on the post-camp survey to measure change over time. Additional items were added to the post-camp survey related to changes in camper attributes following camp. A detailed description of measures is provided in the Appendix.

## Results

**Descriptive statistics.** Of the 850 parents/caregivers who were invited to participate, 645 completed the pre-camp surveys, resulting in a 76% response rate. At post-test, 481 surveys were returned, representing 75% of the pre-camp survey respondents and at the six-month post-test, 450 surveys were returned (70% of pre-camp respondents) with 402 families completing all three waves (62% of pre-camp respondents). A summary of descriptive statistics revealed that the age range for campers was 6.1-18.1 years with a mean age of 12.81 years ( $SD = 2.6$ ). Forty-six percent of campers were male and 54% were female. Parents reported that their children had one of a range of diagnoses, including leukemia (18.1%), juvenile arthritis (13.2%), Crohn's disease (10.7%), sickle cell anemia (5.9%), and others. Sixty-one percent of respondents had attended camp before. Although not statistically significant, the group of children who had attended camp before had slightly lower scores on the psychosocial difficulties measure than children who had not been to camp before ( $p = .08$ ). No other differences were detected across the two groups (first-time campers and returning campers). Additionally, no statistical differences were found on any of the key variables between children whose parents/caregivers responded only at time 1 and those who completed the survey at all three time points.

A number of significant differences were found across the five camps at pre-test and these

differences are noted with asterisks in Table 1. Of note, the average age of campers attending The Painted Turtle was significantly higher than campers attending The Hole in the Wall or Flying Horse Farms.

Children attending The Hole in the Wall Gang Camp had significantly higher emotional reactivity scores at the beginning of the summer than campers attending other camps and campers attending Dynamo Camp scored lower than campers at other camps on a number of measures, including relationship skills, adaptability, use of pro-social coping and passive coping strategies, and lower scores on measures assessing attitude toward taking medication and toward medical personnel.

**Table 1. An overview of respondents by camp and pre-camp scores.**

| Variable                          | The Hole in the Wall Gang Camp | The Painted Turtle | Flying Horse Farms | Dynamo Camp     | Bátor Tábor    | Overall        |
|-----------------------------------|--------------------------------|--------------------|--------------------|-----------------|----------------|----------------|
| N <sub>precamp</sub>              | 147                            | 143                | 100                | 122             | 130            | 642            |
| N <sub>threetimepoints</sub>      | 103                            | 88                 | 65                 | 66              | 80             | 402            |
| Average age of campers            | 12.3<br>(2.5)                  | 13.6*<br>(2.1)     | 12.2<br>(2.0)      | 12.9<br>(2.9)   | 13.1<br>(2.9)  | 12.81<br>(2.6) |
| Gender                            | 49% male                       | 33% male           | 35% male           | 58% male        | 56% male       | 46% male       |
| Emotional Reactivity              | 2.62*<br>(.86)                 | 2.33<br>(.69)      | 2.38<br>(.83)      | 2.38<br>(.97)   | 2.31<br>(.84)  | 2.44<br>(.84)  |
| Relationships Skills              | 4.05<br>(.58)                  | 4.04<br>(.59)      | 4.04<br>(.61)      | 3.61*<br>(.71)  | 4.06<br>(.62)  | 3.97<br>(.63)  |
| Psychosocial Difficulties         | 2.43<br>(.73)                  | 2.37<br>(.68)      | 2.43<br>(.55)      | 2.31<br>(.58)   | 2.55<br>(.48)  | 2.42<br>(.62)  |
| Adaptability                      | 3.63<br>(.75)                  | 3.84<br>(.67)      | 3.75<br>(.72)      | 3.07*<br>(.70)  | 3.57<br>(.51)  | 3.60<br>(.72)  |
| Pro-social coping                 | 3.37<br>(.62)                  | 3.55<br>(.53)      | 3.40<br>(.67)      | 3.03*<br>(.67)  | 3.5<br>(.56)   | 3.39<br>(.63)  |
| Passive coping                    | 2.68<br>(.63)                  | 2.85<br>(.61)      | 2.61<br>(.63)      | 2.38*<br>(.92)  | 2.57<br>(.75)  | 2.64<br>(.72)  |
| Attitude toward medication        | 5.96<br>(1.33)                 | 5.47<br>(1.72)     | 5.32<br>(1.72)     | 5.09*<br>(1.62) | 5.79<br>(1.52) | 5.58<br>(1.6)  |
| Attitude toward medical personnel | 5.94<br>(1.34)                 | 6.28<br>(1.11)     | 6.11<br>(1.16)     | 5.14*<br>(1.59) | 5.38<br>(1.47) | 5.8<br>(1.4)   |

**Comparisons of pre- and post-camp data.** Following camp, parents reported noticing changes in a range of camper attributes. For example, 66% of parents reported that their child demonstrated an increased interest (a little or a lot) in social activities following camp, 79% reported noticing increased confidence levels, 77% reported increased self-esteem, and 64% reported an increased

sense of belonging. Specific percentages are reported in Table 2. Parents were asked these same questions six months after their child had returned from camp. There were slight, but not significant differences across the two time points. Specific percentages from the final time-point are reported in Table 3.

**Table 2. Changes parents noticed in campers one month after camp.**

| <b>Attribute</b>              | <b>A lot less</b> | <b>A little less</b> | <b>No change</b> | <b>A little more</b> | <b>A lot more</b> |
|-------------------------------|-------------------|----------------------|------------------|----------------------|-------------------|
| Openness to try new things    | 0%                | <1%                  | 18.7%            | <b>48.4%</b>         | <b>32.2%</b>      |
| Happiness                     | <1%               | 1.0%                 | 26.0%            | <b>41.2%</b>         | <b>31.6%</b>      |
| Feeling a sense of belonging  | <1%               | 1.9%                 | <b>33.9%</b>     | <b>34.3%</b>         | <b>29.7%</b>      |
| Confidence                    | <1%               | <1%                  | 20.8%            | <b>49.9%</b>         | <b>28.9%</b>      |
| Self-esteem                   | 0%                | <1%                  | 22.9%            | <b>49.5%</b>         | <b>27.2%</b>      |
| Independence                  | <1%               | <1%                  | 25.2%            | <b>47.6%</b>         | <b>26.8%</b>      |
| Interest in Social activities | 0%                | 1.0%                 | 32.4%            | <b>40.1%</b>         | <b>26.4%</b>      |
| Maturity                      | 0%                | <1%                  | 25.2%            | <b>52.6%</b>         | <b>21.8%</b>      |
| Feeling understood            | <1%               | 1.5%                 | <b>41.6%</b>     | <b>37.4%</b>         | <b>19.3%</b>      |
| Acceptance of illness         | <1%               | <1%                  | <b>45.5%</b>     | <b>34.9%</b>         | <b>18.9%</b>      |
| Empathy                       | <1%               | 1.0%                 | <b>40.8%</b>     | <b>38.7%</b>         | <b>18.7%</b>      |
| Sadness                       | <b>13.5%</b>      | <b>27.7%</b>         | <b>52.6%</b>     | 4.8%                 | 1.5%              |
| Anxiety                       | <b>11.6%</b>      | <b>29.3%</b>         | <b>52.2%</b>     | 5.8%                 | 1.0%              |

**Table 3. Changes parents continued to notice in campers six months after camp when asked how they believed camp affected their child.**

| <b>Attribute</b>              | <b>A lot less</b> | <b>A little less</b> | <b>No change</b> | <b>A little more</b> | <b>A lot more</b> |
|-------------------------------|-------------------|----------------------|------------------|----------------------|-------------------|
| Openness to try new things    | <1%               | 2.0%                 | 18.6%            | <b>46.1%</b>         | <b>32.7%</b>      |
| Happiness                     | <1%               | 2.2%                 | 25.4%            | <b>44.3%</b>         | <b>27.9%</b>      |
| Feeling a sense of belonging  | <1%               | 3.1%                 | <b>31.6%</b>     | <b>37.1%</b>         | <b>27.4%</b>      |
| Confidence                    | <1%               | 3.5%                 | 18.2%            | <b>46.3%</b>         | <b>31.4%</b>      |
| Self-esteem                   | <1%               | 3.1%                 | 23.0%            | <b>46.5%</b>         | <b>26.8%</b>      |
| Independence                  | <1%               | 2.6%                 | 21.3%            | <b>46.1%</b>         | <b>29.6%</b>      |
| Interest in Social activities | <1%               | 2.0%                 | 25%              | <b>39.9%</b>         | <b>32.2%</b>      |
| Maturity                      | <1%               | <1%                  | 18.0%            | <b>52.9%</b>         | <b>28.1%</b>      |
| Feeling understood            | 1.3%              | 6.1%                 | <b>32.0%</b>     | <b>39.5%</b>         | 20.8%             |

|                       |              |              |              |              |              |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| Acceptance of illness | 1.3%         | 2.9%         | <b>37.1%</b> | <b>34.0%</b> | <b>23.7%</b> |
| Empathy               | 1.1%         | 2.6%         | <b>36.8%</b> | <b>37.7%</b> | <b>21.3%</b> |
| Sadness               | <b>16.2%</b> | <b>29.4%</b> | <b>45.2%</b> | 7.5%         | 1.1%         |
| Anxiety               | 13.2%        | 27.9%        | <b>46.5%</b> | 9.0%         | 3.1%         |

Multilevel regression analyses were used to investigate statistical differences in a range of social and psychosocial outcomes pre- and post-camp (see Table 4), controlling for camper age, gender, and whether or not campers had attended camp before. Of note, campers experienced significant increases in numerous positive outcomes, including adaptability (e.g., ability to “bounce back” after hardships), positive attitude toward taking medication, positive attitude toward medical personnel, use of pro-social coping strategies (e.g., talking with friends and family in response to challenging situations), and relationship skills (e.g., comfort in relationships and ease making new friends). Campers also demonstrated significant decreases in problems with psychosocial functioning (e.g., getting along with others, worry about what will happen to him/her) and passive coping strategies (e.g., ignoring or avoiding challenging situations or conflict).

**Table 4. Comparisons in camper outcomes from pre- to post-camp at one and six months.**

|  | Pre-camp<br>M<br>(SD) | Post-camp 1<br>M<br>(SD) | Post-camp 2<br>M<br>(SD) | Effect size<br>(from pre to<br>post-camp 1) <sup>a</sup> | Significance <sup>b</sup> |
|--|-----------------------|--------------------------|--------------------------|--|---------------------------|
| Adaptability                           | 3.6<br>(.72)          | 3.75<br>(.65)            | 3.74<br>(.66)            | .22  | $p < .001$                |
| Attitude toward taking medication      | 5.58<br>(1.6)         | 5.92<br>(1.4)            | 5.99<br>(1.57)           | .22  | $p < .001$                |
| Attitude toward medical professionals  | 5.8<br>(1.4)          | 5.96<br>(1.27)           | 6.05<br>(1.3)            | .12  | $p < .01$                 |
| Comfort making friends                 | 5.41<br>(1.68)        | 5.81<br>(1.33)           | 5.74<br>(1.45)           | .26  | $p < .001$                |
| Illness-related stress/PTSD            | 1.33<br>(.47)         | 1.32<br>(.38)            | 1.41<br>(.54)            | .02  | <i>ns</i>                 |
| Problems with psychosocial functioning | 2.42<br>(.62)         | 2.23<br>(.59)            | 2.42<br>(.59)            | .32  | $p < .001$                |
| Passive coping strategies              | 2.64<br>(.72)         | 2.54<br>(.65)            | 2.61<br>(.69)            | .15  | $p < .01$                 |
| Pro-social coping                      | 3.39                  | 3.50                     | 3.52                     | .19  | $p < .001$                |

|                     |       |       |       |     |            |
|---------------------|-------|-------|-------|-----|------------|
| strategies          | (.63) | (.53) | (.58) |     |            |
| Relationship skills | 3.97  | 4.15  | 4.10  | .30 | $p < .001$ |
|                     | (.63) | (.55) | (.55) |     |            |

<sup>a</sup>Effect sizes are calculated as Cohen's d. A Cohen's d value of .2 is considered to be a small effect size, .5 is considered to be moderate, and .8 is considered to be large (Cohen, 2013). <sup>b</sup> $P$  is the probability that a difference found is due to chance. A  $p$  value of .05 indicates that there is less than a 5% chance that a result occurred due to chance. A  $p$  value  $< .01$  indicates that there is less than a 1% chance that the result occurred due to chance. Significance is calculated for the difference across time 1 (pre-camp) and time 2 scores (post-camp one month).

### ***How meaningful are “statistically significant” findings?***

In this report, we focus on findings that have a statistically significant change, but what does that mean? Whether or not a change is “statistically significant” depends on the sample size (small changes are more likely to be statistically significant in a large sample) and how widespread the change was.

*Effect sizes* are one way to determine how meaningful a statistically significant finding is. For each pre-camp to post-camp (one-month) change, there is an effect size presented in Table 4. Effect sizes can help us determine if an effect is small (.2), moderate (.5), or large (.8 or greater) (Cohen, 2013).

Examining standard deviation changes is another way to think about whether or not a change is meaningful. A .5 standard deviation change is considered to be “clinically meaningful” (Norman, Sloan, & Wyrwich, 2003). We can look at the percentage of children who experienced a clinically meaningful change in the sample on each of the key outcomes to get a sense for how many parents/caregivers reported a positive clinically meaningful change at one month after camp.

- Comfort making friends (37% of children showed a clinically meaningful positive change)
- Pro-social coping strategies (37%)
- Illness-related stress/PTSD (36%)
- Attitude toward taking medication (36%)
- Passive coping strategies (36%)
- Problems with psychosocial functioning (35%)
- Adaptability (33%)
- Attitude toward medical personnel (30%)
- Relationship skills (29%)

Although it is challenging to fully attribute these changes to camp participation rather than other factors (normal developmental change or summer vacation) without a control group, it is exciting to see so much positive change occur following exposure to a week at camp!

It is also important to remember that these numbers do not tell the entire story. For example, although 29% of children showed a clinically meaningful *positive* change in relationship skills, 15% of children showed a clinically meaningful *negative* change. In addition to celebrating the successes of camp, it is critical to explore why it is that some children may not be thriving so that camp programming can be adjusted to better support the needs of these children and families.

At six months after camp, many of the observed changes continued to persist with one exception.

Children's problems with psychosocial functioning rose to post-camp levels by the third time point at six months following camp. Many of these same trends exist when dividing findings by individual camps, although many differences emerge as well. Tables (5-9) showing data on key variables across three time points are presented beginning on page 18. Many of the trends seen in the overall sample exist independently by camp, however, breaking down the data in this way significantly reduces the sample size in which findings can be detected, making it more difficult to find effects. In general, the trends seen in the individual camp data (even when these trends were not statistically significant) mirrored the findings in the overall sample. However, two findings (both in the Dynamo Camp sample) were contrary to those in the overall sample. One month after camp, campers who had attended Dynamo Camp reported significantly higher levels of problems with psychosocial functioning, PTSD/stress related to illness, and the use of passive coping strategies (e.g., avoiding problems). Families of campers attending Dynamo Camp reported many positive changes as well, including positive increases in attitudes toward medical professionals and attitudes toward taking medication, relationship skills, and others. There are many potential explanations for these concerning findings. On the pre-camp survey, campers attending Dynamo Camp scored lower on a number of measures in comparison to campers attending other camps, including adaptability and pro-social coping strategies. It is possible these lower scores indicated lower skill levels on characteristics that help children maximize benefit from their camp experience. It is also possible that there were translation errors in surveys (Dynamo Camp surveys were translated from English into Italian) or that factors were present in the lives of Dynamo Camp campers that were not present in the comparison camps. Other differences observed across camps could also be attributed to differences in camp programming, differences in camper characteristics, or other factors.

Interestingly, exploratory analyses looking at the impact of camper characteristics on camper outcomes using multilevel regression analyses revealed that camper relationship skills post-camp significantly predicted residualized gains in camper adaptability, attitude toward taking medication, attitude

toward medical professionals, comfort making friends, decreased problems with psychosocial functioning, and the use of pro-social coping strategies. In other words, parents and caregivers reported significant gains in camper relationship skills one month after camp and these skills were significantly associated with the other positive outcomes observed from camp participation. Models depicting these results are presented beginning on page 21. Without a control sample, it is impossible to know if gains in relationship skills can be fully or partially attributed to participating in camp (rather than to other factors, such as natural developmental change or summer vacation), but taken together with the anecdotal evidence highlighting the social impact of camp, these findings are promising.

### **Implications, Limitations, and Next Steps**

Results from the present study, in combination with previous years' findings, highlight the positive impact of attending SeriousFun camps on the lives of campers. These findings support the relationship between friendships and networks of support developed at camp, improved relationship skills for campers, and the resulting impact on campers' capacities for resilience. According to parents/caregiver reports, campers demonstrated significant positive change on a range of outcomes at one and six months after camp, including increased confidence, self-esteem, and sense of belonging. Additionally, campers showed significant gains on a number of standardized assessments, including increased relationship skills and decreased psychosocial difficulties (although not all of these gains were found to be lasting across camps). Although it is difficult to fully attribute these changes to camp without a comparison group, the findings are promising and highlight many positive outcomes that parents and caregivers report seeing in their children following camp.

Importantly, many campers' demonstrated small, but statistically meaningful gains in relationship skills one month after camp. These skills may play a role in children's camp experience and how well children are able to benefit from camp. The relationship skills campers had pre-camp predicted their

growth on many other measures, suggesting that intentionally focusing on the development of relationship skills could have the potential to help campers maximize their camp experience.

There were several limitations that should be noted. First, because there was no comparison group, it is difficult to know the extent to which changes can be attributed to camp, rather than to typical developmental change or a change in context (e.g., children may experience changes because school is out or they are on summer vacation). Second, in order to increase the response rate, surveys were only collected from parents and caregivers. Although this did result in a high response rate, this approach neglects to take into account campers' perspectives or the perspectives of others (e.g., camp staff).

Results from the current study have the potential to inform camp programming and suggest that intentionally promoting friendships and relationship skills at camp may have the potential to maximize the benefits of camp. Understanding the effects of camp on campers and their families as well as the mechanisms through which camp-related changes occur is critical to ensuring that all children have the best camp experience possible and that positive camp outcomes last beyond camp. Additionally, finding ways to have additional touch points with campers and families throughout the school year may have the potential to ensure that change experienced following camp is lasting.



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## Appendix: Measures used in the study

Camper attributes. At one month after camp, parents/caregivers were asked to rate their child as demonstrating “a lot less,” “a little less,” “no change,” “a little more,” or “a lot more” related to a range of camper attributes (e.g., maturity, self-esteem). The items included on this scale emerged from qualitative analyses of parent/caregiver responses to phone surveys during the 2010-2011 and 2011-2012 studies.

Problems with psychosocial functioning. Children’s problems with psychosocial functioning was measured using the Pediatric Quality of Life Inventory (PEDIQL) (Varni, Seid, & Kurtin, 2001). The PEDIQL includes 15 items intended to assess problems associated with emotional, social, and school outcomes using a likert scale. Higher scores imply more difficulties with psychosocial outcomes (e.g., more difficulty getting along with friends). The PEDIQL has been shown to exhibit sound psychometric properties with a reported alpha of 0.90 for the Total Score Self-Report.

Relationship skills. The Resiliency Scales for Children and Adolescence (RSCA) was used to assess aspects of children’s capacities for resilience, including relationship skills. The RSCA includes three subscales that measure children’s sense of mastery, sense of relatedness, and emotional reactivity. The sense of relatedness subscale, which was used in this study, includes 24 items which are rated on a 5-point scale from 1-5, with higher scores indicating greater capacities for resilience. This measure has been shown to demonstrate strong internal consistency (alphas: .89-.95) and convergent validity (Prince-Embury,, 2007).

**Table 5. Hole in the Wall Gang Camp Findings (N=106)**

|   | Pre-camp<br>M (SD) | Post-camp 1<br>M (SD) | Post-camp 2<br>M (SD) | Effect size<br>(from pre to<br>post-camp 1) | Significance                          |
|---|--------------------|-----------------------|-----------------------|---|---------------------------------------|
| Adaptability                              | 3.63 (.75)         | 3.79 (.71)            | 3.71 (.71)            | .22   | T1-T2 & T2-T3:<br>$p < .01$           |
| Attitude toward taking<br>medication      | 5.96 (1.33)        | 6.13 (1.30)           | 6.39 (1.52)           | .13   | T1-T2: <i>ns</i><br>T1-T3: $p < .01$  |
| Attitude toward medical<br>professionals  | 5.94 (1.34)        | 6.15 (1.78)           | 6.13 (1.35)           | .13   | <i>ns</i>                             |
| Comfort making friends                    | 5.42 (1.64)        | 5.72 (1.52)           | 5.57 (1.62)           | .19   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i>  |
| Illness-related<br>stress/PTSD            | 1.36 (.42)         | 1.29 (.35)            | 1.47 (.76)            | .18   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i>  |
| Problems with<br>psychosocial functioning | 2.43 (.73)         | 2.20 (.64)            | 2.39 (.64)            | .34   | T1-T2: $p < .001$<br>T1-T3: <i>ns</i> |
| Passive coping strategies                 | 2.85 (.61)         | 2.54 (.69)            | 2.70 (.72)            | .48   | T1-T2: $p < .001$<br>T1-T3: $p < .05$ |
| Pro-social coping<br>strategies           | 3.37 (.62)         | 3.46 (.61)            | 3.42 (.61)            | .15   | <i>ns</i>                             |
| Relationship skills                       | 4.04 (.59)         | 4.15 (.55)            | 4.12 (.56)            | .19   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i>  |

**Table 6. Painted Turtle Findings (N=65)**

|   | Pre-camp<br>M (SD) | Post-camp 1<br>M (SD) | Post-camp 2<br>M (SD) | Effect size<br>(from pre to<br>post-camp 1) | Significance                          |
|---|--------------------|-----------------------|-----------------------|---|---------------------------------------|
| Adaptability                              | 3.84 (.67)         | 3.83 (.68)            | 3.92 (.71)            | .01   | <i>ns</i>                             |
| Attitude toward taking<br>medication      | 5.47 (1.72)        | 5.88 (1.49)           | 6.05 (1.43)           | .25   | T1-T2 & T2-T3:<br>$p < .05$           |
| Attitude toward medical<br>professionals  | 6.28 (1.11)        | 6.23 (1.16)           | 6.42 (.88)            | .04   | <i>ns</i>                             |
| Comfort making friends                    | 5.57 (1.43)        | 5.85 (1.19)           | 5.72 (1.46)           | .21   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i>  |
| Illness-related<br>stress/PTSD            | 1.29 (.32)         | 1.26 (.36)            | 1.38 (.44)            | .09   | T1-T2: <i>ns</i><br>T1-T3: $p < .05$  |
| Problems with<br>psychosocial functioning | 2.37 (.68)         | 2.06 (.64)            | 2.33 (.66)            | .47   | T1-T2: $p < .001$<br>T1-T3: <i>ns</i> |
| Passive coping strategies                 | 2.68 (.63)         | 2.38 (.69)            | 2.48 (.79)            | .45   | T1-T2: $p < .001$<br>T1-T3: $p < .01$ |
| Pro-social coping<br>strategies           | 3.55 (.53)         | 3.57 (.56)            | 3.59 (.64)            | .04   | <i>ns</i>                             |
| Relationship skills                       | 4.01 (.58)         | 4.12 (.63)            | 4.14 (.59)            | .18   | <i>ns</i>                             |

**Table 7. Flying Horse Farms Findings (N=88)**

|  | Pre-camp<br>M<br>(SD) | Post-camp 1<br>M<br>(SD) | Post-camp 2<br>M<br>(SD) | Effect size<br>(from pre to<br>post-camp 1) | Significance                         |
|--|-----------------------|--------------------------|--------------------------|---|--------------------------------------|
| Adaptability                           | 3.75 (.72)            | 3.85 (.69)               | 3.92 (.68)               | .14   | <i>ns</i>                            |
| Attitude toward taking medication      | 5.32 (1.72)           | 5.89 (1.26)              | 5.6 (1.84)               | .38   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i> |
| Attitude toward medical professionals  | 6.11 (1.16)           | 6.18 (.98)               | 6.32 (1.02)              | .07   | <i>ns</i>                            |
| Comfort making friends                 | 5.63 (1.47)           | 5.83 (1.23)              | 5.97 (1.25)              | .15   | <i>ns</i>                            |
| Illness-related stress/PTSD            | 1.35 (.36)            | 1.32 (.36)               | 1.34 (.37)               | .08   | <i>ns</i>                            |
| Problems with psychosocial functioning | 2.43 (.55)            | 2.22 (.56)               | 2.34 (.61)               | .38   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i> |
| Passive coping strategies              | 2.61 (.63)            | 2.57 (.62)               | 2.50 (.62)               | .06   | <i>ns</i>                            |
| Pro-social coping strategies           | 3.40 (.67)            | 3.42 (.55)               | 3.53 (.57)               | .03   | <i>ns</i>                            |
| Relationship skills                    | 4.04 (.61)            | 4.14 (.63)               | 4.19 (.54)               | .16   | T1-T2: <i>ns</i><br>T1-T3: $p < .01$ |

**Table 8. Bator Tabor Findings (N=80)**

|  | Pre-camp<br>M (SD) | Post-camp 1<br>M (SD) | Post-camp 2<br>M (SD) | Effect size<br>(from pre to<br>post-camp 1) | Significance                          |
|--|--------------------|-----------------------|-----------------------|---|---------------------------------------|
| Adaptability                           | 3.57 (.51)         | 3.67 (.49)            | 3.66 (.50)            | .20   | <i>ns</i>                             |
| Attitude toward taking medication      | 5.79 (1.52)        | 5.83 (1.59)           | 5.84 (1.58)           | .03   | <i>ns</i>                             |
| Attitude toward medical professionals  | 5.38 (1.47)        | 5.43 (1.49)           | 5.59 (1.49)           | .03   | <i>ns</i>                             |
| Comfort making friends                 | 5.64 (1.54)        | 5.8 (1.42)            | 5.98 (1.27)           | .11   | <i>ns</i>                             |
| Illness-related stress/PTSD            | 1.55 (.48)         | 1.38 (.42)            | 1.47 (.48)            | .38   | T1-T2: $p < .01$<br>T2-T3: <i>ns</i>  |
| Problems with psychosocial functioning | 2.55 (.48)         | 2.14 (.54)            | 2.33 (.52)            | .80   | T1-T2: $p < .001$<br>T1-T3: $p < .01$ |
| Passive coping strategies              | 2.57 (.75)         | 2.54 (.65)            | 2.77 (.65)            | .04   | <i>ns</i>                             |
| Pro-social coping strategies           | 3.5 (.56)          | 3.6 (.43)             | 3.64 (.52)            | .20   | <i>ns</i>                             |
| Relationship skills                    | 4.1 (.62)          | 4.21 (.46)            | 4.15 (.52)            | .20   | T1-T2: $p < .01$<br>T1-T3: <i>ns</i>  |

**Table 9. Dynamo Findings (N=66)**

|  | Pre-camp<br>M (SD) | Post-camp 1<br>M (SD) | Post-camp 2<br>M (SD) | Effect size<br>(from pre to<br>post-camp 1) | Significance                           |
|--|--------------------|-----------------------|-----------------------|---|--|
| Adaptability                           | 3.07 (.70)         | 3.56 (.58)            | 3.44 (.54)            | .76   | T1-T2 & T2-T3:<br>$p < .001$           |
| Attitude toward taking medication      | 5.09 (1.62)        | 5.79 (1.52)           | 5.82 (1.46)           | .45   | T1-T2 & T2-T3:<br>$p < .001$           |
| Attitude toward medical professionals  | 5.14 (1.59)        | 5.73 (1.33)           | 5.71 (1.49)           | .40   | T1-T2 & T1-T3:<br>$p < .01$            |
| Comfort making friends                 | 4.72 (2.17)        | 5.88 (1.20)           | 5.53 (1.48)           | .66   | T1-T2 & T2-T3:<br>$p < .001$           |
| Illness-related stress/PTSD            | 1.03 (.65)         | 1.40 (.42)            | 1.38 (.40)            | .68   | T1-T2 & T2-T3:<br>$p < .001$           |
| Problems with psychosocial functioning | 2.31 (.58)         | 2.62 (.34)            | 2.74 (.28)            | .65   | T1-T2: $p < .001$<br>T1-T3: $p < .001$ |
| Passive coping strategies              | 2.38 (.92)         | 2.70 (.46)            | 2.54 (.60)            | .44   | T1-T2: $p < .05$<br>T1-T3: <i>ns</i>   |
| Pro-social coping strategies           | 3.03 (.67)         | 3.46 (.44)            | 3.42 (.49)            | .76   | T1-T2 & T1-T3:<br>$p < .001$           |
| Relationship skills                    | 3.61 (.71)         | 4.11 (.45)            | 3.89 (.52)            | .84   | T1-T2: $p < .001$<br>T1-T3: $p < .01$  |

| Model 1 (predicting Camper Adaptability) |          |             |                     |
|--|----------|-------------|---------------------|
| Variable                                 | <i>B</i> | <i>SE B</i> | $\beta^a$           |
| Child age <sup>b</sup>                   | .03      | .01         | .10                 |
| Gender <sup>c</sup>                      | .09      | .05         | .07                 |
| Attended camp before <sup>d</sup>        | -.03     | .05         | -.02                |
| Relationship skills                      | .53      | .04         | .45*** <sup>e</sup> |
| Pre-test scores                          | .36      | .03         | .41***              |
| <i>R</i> <sup>2</sup>                    |          | .52         |                     |
| <i>F</i>                                 |          | 86.59***    |                     |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

| Model 2 (predicting Attitude Toward Taking Medication) |          |             |                     |
|--|----------|-------------|---------------------|
| Variable   | <i>B</i> | <i>SE B</i> | $\beta^a$           |
| Child age <sup>b</sup>                                 | -.01     | .02         | -.02                |
| Gender <sup>c</sup>                                    | .02      | .13         | -.01                |
| Attended camp before <sup>d</sup>                      | .02      | .13         | -.01                |
| Relationship skills                                    | .57      | .11         | .22*** <sup>e</sup> |
| Pre-test scores  | .39      | .04         | .43***              |
| <i>R</i> <sup>2</sup>                                  |          | .25         |                     |
| <i>F</i>   |          | 27.72***    |                     |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

| Model 3 (predicting Attitude Toward Medical Professionals) |          |             |           |
|--|----------|-------------|-----------|
| Variable   | <i>B</i> | <i>SE B</i> | $\beta^a$ |
| Child age <sup>b</sup>                                     | .02      | .02         | .05       |
| Gender <sup>c</sup>  | -.03     | .11         | -.01      |
| Attended camp before <sup>d</sup>                          | .10      | .11         | .04       |
| Relationship skills  | .30      | .10         | .13**e    |
| Pre-test scores  | .47      | .04         | .52***    |
| <i>R</i> <sup>2</sup>                                      |          | .32         |           |
| <i>F</i>   |          | 36.45***    |           |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

| Model 4 (predicting Comfort Making Friends) |          |             |           |
|---|----------|-------------|-----------|
| Variable                                    | <i>B</i> | <i>SE B</i> | $\beta^a$ |
| Child age <sup>b</sup>                      | .04      | .02         | .07       |
| Gender <sup>c</sup>                         | -.09     | .11         | -.03      |
| Attended camp before <sup>d</sup>           | -.23     | .11         | -.09*e    |
| Relationship skills                         | .84      | .11         | .35***    |
| Pre-test scores                             | .27      | .04         | .34***    |
| <i>R</i> <sup>2</sup>                       |          | .31         |           |
| <i>F</i>                                    |          | 42.87***    |           |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .



| Model 5 (predicting Psychosocial Functioning) |          |             |                      |
|---|----------|-------------|----------------------|
| Variable                                      | <i>B</i> | <i>SE B</i> | $\beta^a$            |
| Child age <sup>b</sup>                        | -.01     | .01         | -.04                 |
| Gender <sup>c</sup>                           | .03      | .05         | .02                  |
| Attended camp before <sup>d</sup>             | -.01     | .05         | -.01                 |
| Relationship skills                           | -.24     | .48         | -.23*** <sup>e</sup> |
| Pre-test scores                               | .37      | .43         | .39***               |
| <i>R</i> <sup>2</sup>                         |          | .24         |                      |
| <i>F</i>                                      |          | 25.49***    |                      |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .

| Model 6 (predicting Prosocial Coping Strategies) |          |             |                     |
|--|----------|-------------|---------------------|
| Variable   | <i>B</i> | <i>SE B</i> | $\beta^a$           |
| Child age <sup>b</sup>                           | .03      | .01         | .15*** <sup>d</sup> |
| Gender <sup>c</sup>                              | .02      | .05         | .02                 |
| Attended camp before <sup>d</sup>                | .01      | .05         | .01                 |
| Relationship skills                              | .31      | .05         | .32*** <sup>e</sup> |
| Pre-test scores                                  | .21      | .04         | .25***              |
| <i>R</i> <sup>2</sup>                            |          | .22         |                     |
| <i>F</i>   |          | 24.22***    |                     |

*Note:* <sup>a</sup>The  $\beta$  is a standardized effect size with  $\beta = .1$  considered to be a weak effect,  $\beta = .3$  being a moderate effect and  $\beta = .5$  being a strong effect (Acock, 2008). <sup>b</sup>child age measured in years. <sup>c</sup>gender: male=0; female=1. <sup>d</sup>camp before=1; first-time camper=0. <sup>e</sup>\*\*\* $p < .001$ , \*\* $p < .01$ , \* $p < .05$ .