

## **Effect of a Primary Prevention Intervention on Resilience of Elementary-Aged Students**

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### **Abstract**

The present study investigates the effect of an interactive primary prevention intervention on elementary school students' resiliency behaviors. A total of 106 rural Missouri, USA students in an after-school program received the Forest Friends curriculum once a week for thirty minutes during their regularly-scheduled drug education session. During the month-long intervention, puppets were used to teach general life skills including resiliency and coping related to substance abuse and violence. A self-reported 18-question pre/post-test was used to assess the resiliency subscale categories of Feelings, Honesty/Trust, Respect, Pride, Choices, and Talent. Independent t-tests were used to compare the pre/post scores of the intervention. Statistically significant improvements were found in overall behaviors linked to resilience among the participants in this study, as well as several of the specific skill subscales (Choices & Talent). The current study showed that the Forest Friends curriculum is an effective intervention method for building various resiliency skills in elementary-aged youth through hands-on learning.

**Keywords:** Substance abuse prevention, resilience, early elementary level

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## **Introduction**

Protective factors are characteristics that help predict a low probability of engaging in risky health behaviors (Losel & Farrington, 2012). The specific protective factors for substance abuse and violence in youth overlap in many areas. Bonding and participation with family, school, and religious organizations can help protect youth from negative influences (Centers for Disease Control and Prevention, 2017; Hawkins, Catalano, & Miller, 1992). Other protective factors include having a higher than average intelligence and maintaining a high-level grade point average in school (Centers for Disease Control and Prevention, 2017; Losel & Farrington, 2012). Close relationships to parents, consistent presence of a parent during morning, after-school, and evening hours as well as having the opportunity to discuss problems with parents has also been shown to protect adolescents from violent behavior and substance abuse (Centers for Disease Control and Prevention, 2017; Hawkins, Catalano, & Miller, 1992). Strong relationships with positive peer groups and participation in prosocial activities can also help to provide a buffer against negative behaviors (Centers for Disease Control and Prevention, 2017).

## **Literature Review**

One dimension relevant to protective factors is resiliency. Resiliency is defined as the ability to adjust individual impulse control based on the situation the individual finds themselves in (Weiland et al., 2012) or to adjust the level of behavioral control one exhibits based on the situation (Wong et al., 2006), mainly as a means of recovery. Models describing the relationship between resiliency and behavior suggest a relationship between the presence of resiliency and the strength of working memory (Weiland et al., 2012). When resiliency is present, youth exhibit less likelihood to initiate drug-related behaviors; when it is absent, the likelihood of initiating drug use increases.

Resiliency, however, is not created through working memory alone. For example, one study of rural Hawaiian youth reviewed the ecological impact on drug use in adolescents. For the youth in that study, having extended familial community ties proved to be a protective factor and a predictor of resistance to drug initiation (Okamoto, Helm, Po'a-Kekuawela, Chin, & Nebre, 2009). In addition to familial impacts, gender appears to play a role in resilience. While some research suggests that development of protective factors for resilience is significant for both males and females (Hartman, Turner, Daigle, Exum, & Cullen, 2009), Moon, Jackson, and Hecht (2000) suggest that it is an indirect relationship for males. Earlier intervention may then be necessary for the development of skills for avoidance of drug behavior in males.

The effectiveness of resiliency programs on drug use continues to be evaluated. One recent (2017) meta-analysis of 19 studies concluded that resiliency programs, while effective in reducing initiation of illicit drug use, were not as successful for the prevention of alcohol or tobacco use (Hodder et al., 2017). Other reviews, however, have found that students with high resiliency skills had delayed alcohol use and were less likely to initiate cigarette use (in addition to lower illicit drug initiation) than peers with lower resiliency skills (Weiland et al., 2012). Regardless of the strength of resiliency, it is suggested that the connection between the brain and resilience is evident, and that programs directed at youth have a greater chance to influence positive outcomes (Weiland et al., 2012; Moon, Jackson, & Hecht, 2000; Hodder et al., 2017).

Primary prevention, a cost-efficient strategy, is utilized to prevent an injury or disease by reducing exposure or unsafe behaviors that cause a problem. Primary substance abuse and violence prevention programs are designed for youth with actions and activities to prevent these behaviors before they first occur. The most effective programs are aimed at reducing risk factors and increasing protective factors in youth (Griffin & Botvin, 2010). Multiple approaches to substance abuse and violence prevention such as media campaigns and health education increase the chances of the program being effective in its goals (Price, Telljohan, Dake, Marisico, & Zyla, 2002). According to best practices in the field, primary prevention programs should focus on several different levels of influence (Griffin & Botvin, 2010). These include interactive school-based programs that address social and emotional skills, family programs with skills training/engagement, and community programs with substantial resources (Griffin & Botvin, 2010; Hawkins, Catalano, & Miller, 1992).

Forest Friends (Wellspring Prevention, 2016), a research-based, primary prevention intervention for early elementary-aged students, focuses on improving students' resiliency and coping skills related to substance abuse and violence. Through a life skills-based curriculum, the intervention aims to specifically improve conflict resolution, decision-making, and anger management skills in participants. The intervention (including hands-on activities and discussion to reinforce lessons) features realistic scenarios portrayed through puppets that teach students about the topics of emotions, decision-making, coping and resiliency, and general life skills. Because resilience, the ability to recover quickly, may be a protective factor for substance abuse, the curriculum was designed for early elementary-aged students in their formative years to teach and reinforce resiliency concepts as well as conflict resolution skills. In one study, appropriate interpersonal and decision-making skills improved in curriculum participants (Center for Alcohol and Drug Resources, 2017).

## **Purpose**

Because primary prevention interventions can help to address substance abuse risk factors in a community, and resilience may be a protective factor for substance abuse, the research question addressed in this study was: What effect did the Forest Friends program have on participant self-reported resiliency behaviors?

## **Methods**

One group pretest-posttest design was the quasi-experimental research design used in this study to determine the effect of a primary prevention intervention on resilience of elementary-aged students.

## **Sample**

One hundred eight early elementary-aged students (grades K-2) involved in an afterschool program in a rural, Missouri, USA county were asked to participate in this study. Students in that county report easy access (higher than state levels) to alcohol, tobacco, e-cigarettes, and prescription drugs. They also report lower perception of harm compared to state levels for e-cigarettes, alcohol, and binge drinking (Behavioral Health Profile, 2017). Almost all (106/108, 98.1%) of the students in the afterschool program consented and participated. The Kindergarten group included 40 students (19 boys, 21 girls; 37 White), the first-grade group included 34 students (15 boys, 19 girls; 29 White), and the second grade group included 32 students (16 boys, 16 girls; 25 White).

## **Instrument**

The 18-question Forest Friends Pre-Post (Wellspring Prevention, 2016) written quiz was used to assess student participants' self-reported resiliency attitudes/behaviors, specifically conflict resolution, decision-making, and anger management. The brief quiz accompanied the curriculum and included three statements each under the following headings: Feelings, Honesty/Trust, Respect, Pride, Choices, and Talent. For each statement, participants responded with "yes" or "no" to indicate if they agreed with the statement or the statement reflected their behavior. For example, under the area of Feelings, statements included, "It is okay to get mad.", "When I feel sad, I tell someone.", and "It helps to talk about my feelings.". The pro-social or more resilient response to each of these items is "Yes".

## Procedure

After Institutional Review Board approval, afterschool administrator consent, parent/guardian consent, and student participant assent; the participants completed their confidential pre-quiz immediately before the first curriculum lesson.

One day each week for 30 minutes, over four weeks (two 15-minute lessons with a stretch or play break in-between) during the fall 2017 semester, Forest Friends lessons were delivered during the regularly-scheduled afterschool program's drug education session. Because of the sensitive nature of drug education for participants of early elementary age, adult community members from a local drug prevention coalition attended a day-long training to become program instructors. The instructor training was provided by a curriculum and instruction expert from the prevention center that housed the program. The training included not only instruction on program content and delivery, fidelity to the curriculum, and the process of puppetry but also on the cognitive and affective development of early elementary-aged students and how to appropriately deal with any sensitive situations. To start each lesson, the participants were separated by grade level into three classrooms, all with comfortable seating areas and surroundings. Each group was assigned two trained community member instructors so all participants would get instructor attention. During the teaching of each lesson, the trained community member instructors narrated a story that included a positive life lesson. The participants with their puppets acted-out the scenes, and a short question/discussion session followed.

During Lesson 1 on recognizing feelings, one puppet was sad and consulted all their friends about how to handle this feeling. The story and follow-up questions reinforced the use of positive coping mechanisms and the resiliency behaviors of healthy coping and problem-solving. Lesson 2 covered honesty and trust between friends and focused on a puppet that did not trust anyone or feel comfortable telling the truth about upsetting issues. Participants were then asked to identify people in their lives to whom they could tell the truth and could trust, focusing on the resiliency behavior of social support. The topic of Lesson 3 was respect as one puppet was teasing another in a disrespectful way as participants learned communication skills and the importance of respecting differences, focusing on the resiliency skills of managing emotions and helping others. Lesson 4 was about the "beauty within" as one puppet was disappointed because another did not invite her to a gathering. Participants learned what it means to be beautiful on the inside, focusing on the resiliency skill of seeing oneself as resilient. Lesson 5 was about choices when one puppet faced the temptation to steal from another. Participants discussed the importance of thinking before taking action, focusing on the resiliency skill of impulse control. The final lesson covered the "talent within." In this lesson, the puppets conducted a talent show, and the participants discussed what makes them unique and talented, focusing on the resiliency skill of finding meaning in life (Wellspring Prevention, 2016).

The participants completed their confidential post-quizzes immediately after the last curriculum lesson.

### Analysis

**Table 1**  
*Frequencies and Percentages of Pre and Post Resilience Items*

Item	n	Yes n (%)	No n (%)
<i>Feelings Subscale Items</i>			
It is okay to get mad.			
Pre	97	79(81.4)	18 (18.6)
Post	74	64(86.5)	10(13.5)
When I feel sad, I tell someone.			
Pre	97	74(76.3)	23(23.7)
Post	74	61(82.4)	13(17.6)
It helps to talk about my feelings.			
Pre	97	70(72.2)	27(27.8)
Post	74	46(62.2)	28(37.8)
<i>Honesty/Trust Subscale Items</i>			
If I trust someone, I can tell them about my feelings.			
Pre	97	66(68.0)	31(32.0)
Post	74	57(77.0)	17(23.0)
If I trust someone, I know I can go to them for help.			
Pre	97	71(73.2)	26(26.8)
Post	74	60(81.1)	14(18.9)
I can trust anyone, as long as they are nice to me.*			
Pre	97	54(55.7)	43(44.3)
Post	74	40(54.1)	34(45.9)
<i>Respect Subscale Items</i>			
I show respect when I follow the rules.			
Pre	97	79(81.4)	18(18.6)
Post	74	60(81.1)	14(18.9)
I show respect when I help others.			
Pre	97	68(70.1)	29(29.9)
Post	74	60(81.1)	14(18.9)
I show respect when I laugh at others that are different.*			
Pre	97	25(25.8)	72(74.2)
Post	74	20(27.0)	54(73.0)

<i>Pride Subscale Items</i>			
I always do my best			
Pre	97	79(81.4)	18(18.6)
Post	74	59(79.7)	15(20.3)
I am special in my own way.			
Pre	97	80(82.5)	17(17.5)
Post	74	62(83.8)	12(16.2)
When my friend feels bad about themselves, I should leave them alone.*			
Pre	97	42(43.3)	55(56.7)
Post	74	31(41.9)	43(58.1)
<i>Choices Subscale Items</i>			
When making a decision, I have to think of all the things that could happen with each choice.			
Pre	97	74(76.3)	23(23.7)
Post	74	61(82.4)	13(17.6)
When making a decision, I have to think how each choice will make me feel.			
Pre	97	60(61.9)	37(38.1)
Post	74	55(74.3)	19(25.7)
When making a decision, I never ask for help.*			
Pre	97	31(32.0)	66(88.0)
Post	74	8(10.8)	66(89.2)
<i>Talent Subscale Items</i>			
I am talented			
Pre	97	68(70.1)	29(29.9)
Post	74	68(91.9)	6(8.1)
We all have special talents.			
Pre	97	57(58.8)	40(41.2)
Post	74	65(87.8)	9(12.2)
I have the courage to learn new things.			
Pre	97	75(77.3)	22(22.7)
Post	74	64(86.5)	10(13.5)

Note: Coded as 1 = Yes and 0 = No unless reverse coded.

Note: \* indicates an item that was reverse coded.

Responses were coded as 0 for the less resilient/pro-social response or 1 for the more resilient/pro-social response. For example, the item, "I show respect when I follow the rules." was coded as 0 for a "no" response and 1 for a "yes" response, whereas, the item, "I show respect when I laugh at others that are different." was coded as 1 for a "no" response and 0 for a "yes" response. Coding for items can be determined by reviewing Table 1 and its corresponding notes. Subsequently, scores were summed for each of the

six subscales (each containing three items) and the total scale (18 items). Possible subscale scores ranged from 0-3 and possible total scores ranged from 0-18. Descriptive statistics and measures of central tendency were computed on all items and subscale and total scores as appropriate. Independent samples t-tests were calculated for total and subscale pre-post scores. Student participants were not matched on their quizzes due to afterschool program administration request to have no identifiers on the quizzes.

## Findings and Results

**Table 2**

*t-test Results Comparing Pre and Post Scores for Subscales and Total Scale*

Subscale or Total Scale	n	Mean	SD	t	df	p
<b>Feelings</b>						
Pre	97	2.30	1.19	-0.07	169	0.945
Post	74	2.31	1.01			
<b>Honesty/Trust</b>						
Pre	97	1.86	0.66	-1.78	169	0.078
Post	74	2.04	0.69			
<b>Respect</b>						
Pre	97	2.26	0.75	-0.81	169	0.421
Post	74	2.35	0.75			
<b>Pride</b>						
Pre	97	2.21	0.69	-0.09	169	0.925
Post	74	2.21	0.69			
<b>Choices</b>						
Pre	97	2.06	0.73	-3.45	169	0.001*
Post	74	2.46	0.76			
<b>Talent</b>						
Pre	97	2.06	1.19	-3.85	168.32	0.000*
Post	74	2.66	0.85			
<b>Total Scale</b>						
Pre	97	12.74	4.38	-1.99	169	0.048*
Post	74	14.04	4.01			

\* $p < 0.05$

The item with the greatest percentage of pro-resiliency responses was, “When making a decision, I never ask for help” with 89.2% of post-test participants responding that this was untrue for them. See Table 1. Post-test scores were statistically significantly higher for two of the six subscales and the total scale. The post-test scores for the Choices subscale were  $M = 2.45$ ,  $SD = 0.76$  as opposed to the pre-test scores  $M = 2.06$ ,



SD = 0.73,  $t(169) = -3.45$ ,  $p = .001$ . Additionally, the post-test scores for the Talents subscale were  $M = 2.66$ ,  $SD = 0.85$  as opposed to the pre-test scores  $M = 2.06$ ,  $SD = 1.19$ ,  $t(168.32) = -3.85$ ,  $p = .000$ . The post-test Total scale scores were  $M = 14.04$ ,  $SD = 4.01$  versus the pre-test scores of  $M = 12.74$ ,  $SD = 4.38$ ,  $t(169) = -1.99$ ,  $p = .048$ . Statistically significant differences were not found for the Feelings, Honesty, Respect, or Pride subscales.

## Conclusions

A primary prevention intervention for early elementary-aged participants used real-world scenarios featuring puppets playing on a soccer team to teach resiliency and coping skills. The month-long intervention was provided during an afterschool program's dedicated substance abuse prevention session. Student participants were quizzed pre-post-program on their self-reported resiliency behaviors with significant improvement in total and two subscale scores. The current study showed that the Forest Friends curriculum is an effective intervention method for building various resiliency skills in elementary-aged youth through hands-on learning.

Results of this study are consistent with the existing literature in several circumstances. Statistically significant changes in the overall improvement in skills found in this study supports Moon, Jackson, and Hecht's (2000) work on the effectiveness of early intervention and the establishment of concepts and ideals that provide a framework for resiliency at later ages. Specific improvements in the Choices subscale are particularly important to resiliency. Weiland's (2012) work established the importance of emotional and/or behavioral control for resiliency to develop. The Choices subscale of the Forest Friends curriculum specifically demonstrated how children can think before they take action, in one scenario, before stealing. Questions in the pre-post-test tie choices to feelings and outcomes, helping students make the connection to what happens after the decision is made. The foundation of understanding that one can control the impulse to steal and elicit positive decision-making ability is a strength of the curriculum. Significant improvements on the Talents subscale of the Forest Friends curriculum are also important to resiliency. Children can find meaning in their lives and social support through their diversity of talents. Awareness of strengths and assets, both of self and others, is a key characteristic of resiliency as a strengths-based approach to coping with challenges. Additionally, positive peer relations can be a protective factor against risk behaviors (Centers for Disease Control and Prevention, 2017).

The study is not without limitations. The desire of school administration to have no personal identifiers on the pre/post-tests prevented within-group comparisons, particularly by gender. It also prevented the ability of the team to look for significance in individual gains and rely on group measures. The immediacy of post-testing in relation to completion of the curriculum did not allow for the measure of long-term improvements or retention of the concepts taught in the curriculum, and data were limited exclusively to self-report on the survey items. Additional data collection measures such as observation of behaviors or potentially qualitative data gathered from participants may have been able to more thoroughly demonstrate program effectiveness. Further, a lack of control group makes it difficult to identify if confounding variables may have influenced participants, thus, threatening the validity of the study results.

### **Findings and implications**

Programs that can reduce risk factors and increase protective factors are considered best practices (Griffin and Botvin, 2010). The Forest Friends curriculum appears to meet those standards. The establishment of a positive peer group and prosocial behavioral reinforcement builds on protective factors for participants. Again, significant improvements in decision-making and self-esteem, as well as practical, non-significant improvements in other areas of prosocial behavior (honesty, feelings, etc.) builds a foundation for future educational practices to reinforce and develop resiliency.

The resiliency framework (Weiland et al., 2012; Wong et al., 2006), including risk-protective models, is supported by current study results. It seems self-reported resiliency and coping skills may be improved if children are given an opportunity to learn and practice the skills in a supportive environment like the one in this study. Strengthening protective factors may mitigate or buffer negative effects of unhealthy risks. Substance abuse prevention programs, therefore, should focus on building positive assets and protective factors, key components of the resiliency framework. Additionally, resilience can be applied more broadly than just substance abuse prevention. The ability to adjust to and cope with any adversity or unhealthy risks in the environment is an important skill to be learned and used throughout life.

That said, the implications for school curriculum are important. The relevance of providing early intervention, prosocial behavior curriculum can, at least in the short term, build a foundation for resiliency in youth. Hands-on, interactive activities like the one used in this study engage students in a positive experience, establish school norms and expectations, and help students to understand how to keep themselves healthy.

Future research should focus on the length of impact of this type of intervention as described in the Weiland model. Determining if early exposure to resiliency activities in a cohort engrains resilience into the working memory of youth as they progress into adolescence is recommended. In addition, establishing if these ideas are recalled and utilized as students age. Certainly, as youth transition into adolescence, the impact of protective factors on exposure to substance use and violence become significant.

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