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Preventing Internalizing and Externalizing Problems in Girls in Foster Care as they Enter Middle School: Immediate Impact of an Intervention

Dana K. Smith, PhD[Research scientist],
Oregon Social Learning Center, Eugene, Oregon

Leslie D. Leve, PhD[Senior scientist], and
Oregon Social Learning Center and the Center for Research to Practice, Eugene, Oregon

Patricia Chamberlain, PhD[Senior scientist]
Oregon Social Learning Center and the Center for Research to Practice, Eugene, Oregon

Abstract

Girls in foster care have been shown to be at risk for emotional and behavioral problems, especially during the preadolescent and adolescent years. Based on these findings and on the lack of research-based preventive interventions for such youths, the current study examined the immediate impact of an intervention targeting the prevention of internalizing and externalizing problems for girls in foster care prior to middle school entry. Study participants included 100 girls in state-supported foster homes who were randomly assigned to an intervention condition or to a control condition (foster care services as usual). The intervention girls were hypothesized to have fewer internalizing problems, fewer externalizing problems, and more prosocial behavior at 6-months postbaseline compared to the control girls. The results confirmed the hypotheses for internalizing and externalizing problems, but not for prosocial behavior. Limitations and future directions are discussed.

Keywords

girls; foster care; prevention; adolescent

The United States child welfare system served 783,000 families in 2007, including nearly 500,000 foster children (U.S. Department of Health and Human Services, 2008). Despite the high numbers of foster children, few prior studies have focused specifically on girls. Although limited, the existing research findings on girls in foster care have demonstrated girls' risk for emotional and behavioral problems (Elze, Auslander, McMillen, Edmund, & Thompson, 2001; Garland et al., 2001; Lewis, Pincus, Lovely, Spitzer, & Moy, 1987; Widom, 2000). Further, risk for emotional and behavioral problems typically increases during the preadolescent and adolescent years, when youths are exposed to larger and more diverse peer groups, increased peer influences, and pubertal changes (Natsuaki, Biehl, & Ge, 2009; Westling, Andrews, Hampson, & Peterson, 2008).

Prior research on the development of adolescent problem behavior has highlighted several risk factors that are particularly relevant for youths with foster care histories. These include factors such as childhood maltreatment, which has been shown to be related to the

development of later internalizing and externalizing problems (Kaufman & Charney, 2001; McCord, 1983; Smith, Leve, & Chamberlain, 2006; Tarren-Sweeney & Hazell, 2006; Toth, Manly, & Cicchetti, 1992). Childhood maltreatment has also been shown to exacerbate problems in adolescent girls with existing behavior problems (Smith et al., 2006). Second, researchers have suggested that early pubertal development is associated with the development of internalizing and externalizing problems in girls (Ge, Brody, Conger, & Simons, 2006; Graber, Brooks-Gunn, & Warren, 2006; Negri, Fung, & Trickett, 2008), and youths who have experienced unstable rearing environments are more likely to experience early pubertal onset (Ellis & Garber, 2000; Tither & Ellis, 2008). Together, these findings highlight the increased risk for girls in foster care, who often have high rates of childhood maltreatment and earlier onset of puberty.

Although boys and girls in foster care typically have poorer outcomes than youths without foster care histories, several studies have suggested that girls in foster care are at increased risk compared to boys in foster care. Girls have been found to have significantly higher rates of childhood abuse than boys (Timmons-Mitchell et al., 1997) and high rates of co-occurring physical abuse (Green, Russo, Navratil, & Loeber, 1999). In addition, girls in foster care typically come from families with higher levels of stress and criminality (Maskin & Brookins, 1974; Smith, 2004). Prior studies have also suggested that girls in foster care have higher rates of out-of-home placements (Smith, Stormshak, Chamberlain, & Bridges Whaley, 2001) and are at higher risk for emotional and behavioral problems (James et al., 2009; Leve, Fisher, & DeGarmo, 2007; Litrownik, Newton & Landsverk, 2005; Smith, 2004).

Although limited research has been conducted with girls in foster care to date, the importance of developing and testing interventions for these girls prior to the development of chronic emotional and behavioral problems has been identified by researchers, clinicians, and policy makers (see Hipwell & Loeber, 2006). Despite the well-documented risks for girls in foster care, the identified targets for prevention, and the potential public health impact of these risks, adolescent girls in foster care are less likely to receive specialty mental health services than are boys in foster care (Caseau, Luckasson, & Kroth, 1994; Offord, Boyle, & Racine, 1991); further, no empirically validated programs using randomized trials have been conducted to target emotional and behavioral problems in girls in foster care (see Hipwell & Loeber, 2006).

Based on the well-documented risks faced by girls in foster care and the lack of research-based preventive interventions for such youths, we examined the effects of a preventive intervention for girls in foster care. This intervention targeted the prevention of internalizing and externalizing problems during the transition to middle school to help prevent more serious, longer term outcomes such as delinquency, substance use, and high-risk sexual behavior in later middle school (see Figure 1). Using a sample of 100 girls in state-supported foster care who were randomized into intervention or control conditions, we examined the immediate impact of the intervention on preventing internalizing and externalizing problems. We hypothesized that girls in the intervention condition would have fewer internalizing problems, fewer externalizing problems, and more prosocial behaviors measured at 6-months postbaseline compared to the control girls. Maltreatment history and pubertal development were included as covariates in the analyses because of the documented associations between these variables and the targeted outcomes.

Methods

Participants

Girls eligible to participate in this study were required to be living in state-supported foster homes in Lane County or Multnomah County, Oregon, and to be finishing elementary school between 2004 and 2007. All eligible girls were referred through the local child welfare systems. From the pool of eligible participants ($N = 145$), 100 girls and their foster parents were recruited during the spring of their final year of elementary school ($M = 5^{\text{th}}$ grade, range = 4^{th} – 6^{th} grade). The girls were enrolled on a rolling basis, and recruitment ceased when enrollment reached 100 participants. Prior to completing the baseline assessment, the participants were randomly assigned to the intervention condition ($n = 48$) or to the control condition ($n = 52$) following foster parent consent, caseworker consent, and girl assent. A coin flip was used for the randomization process in lieu of other randomization processes (e.g., computerized) to allow for a community member to be present during the process and to provide transparency and ease of understanding to caseworkers and study participants. The study was conducted in compliance with the Oregon Social Learning Center's Institutional Review Board and the study was registered as a clinical trial through the National Institute of Mental Health.

The average age of the girls at baseline was 11.54 years ($SD = 0.48$). The ethnic distribution of the girls was 63% European American, 9% African American, 4% Native American, 10% Latino, and 14% multiracial. At the time of the study, 79% of girls ages 10–14 in the study region were European American (U.S. Census Bureau, 2008). At baseline, the girls had been in foster care an average of 2.90 years ($SD = 2.24$) and had experienced an average of 1.37 out-of-home placements ($SD = 0.66$).

At baseline, 70% of parents were foster mothers, 1% were foster fathers, 28% were kinship foster parents (14% grandparents and 14% other relative), and 1% were adoptive parents. The average age of foster parents at baseline was 48.16 years ($SD = 8.98$). The ethnic distribution of foster parents was 70% European American, 17% African American, 3% Native American, 4% Latino, 1% Asian, and 5% multiracial. There were no significant group differences in the baseline demographic characteristics or the baseline study variables.

Procedure

The girls and their foster parents were assessed at baseline (T1) and at 6-months postbaseline (T2) using a multimethod, multiagent assessment approach that consisted of a standardized interview and questionnaires for each girl and foster parent, an interview with the girl's caseworker, and the collection of child welfare records. The interviews lasted approximately 2 hr, were conducted in person by assessors who were blind to the participants' group assignments, and were aimed at measuring child and family characteristics, child behaviors, and parenting practices.

Intervention

Overview—The intervention began during the summer prior to middle school entry and consisted of two parallel components (both led by paraprofessionals): a six-session, group-based intervention for the girls and a six-session, group-based intervention for the foster parents. The groups met twice weekly for 3 weeks in the summer prior to middle school, with approximately seven participants per group. The foster parent sessions were led by a facilitator and a cofacilitator. The girl sessions were conducted by a facilitator and three assistants. The facilitator and cofacilitator of the foster parent groups were experienced foster parents with bachelor's degrees. The facilitator of the girl sessions was a graduate student and the assistants were undergraduate students. All interventionists were trained and

supervised by a doctoral-level clinician. The high staff-to-girl ratio (1:2) allowed for individualized attention, one-on-one modeling/practicing of new skills, and frequent reinforcement of positive behaviors. The mean time between the completion of the intervention and the T2 assessment was 147 days ($SD = 45.61$). When changes in placement/caregiver occurred between the baseline and 6-month assessment (20% of the sample), we followed the girl to her new placement and recruited the girl's new caregiver to participate in the study.

In addition to the sessions provided during the summer, follow-up intervention services (i.e., ongoing training and support) were provided to the intervention foster parents and girls once a week for two hours (foster parent meeting; one-on-one session for girls) throughout the first year of middle school. On average, parents attended 10.18 weekly meetings ($SD = 5.09$) during the school year. Our evaluation of the longer-term impact of the intervention that encompasses the full delivery of the follow-up intervention services will occur as follow-up data are processed.

Focus for girls—The summer intervention for the girls was focused on setting personal goals; establishing and maintaining positive relationships with peers and adults; developing effective decision-making and problem-solving strategies; developing support systems for reaching goals; and modeling, practicing, and reinforcing adaptive behaviors. Each session was manualized, with a didactic focus that was highly structured to provide a safe and predictable learning atmosphere for the girls. The group structure typically included an introduction to the session topic, role plays, and a game or activity during which girls practiced the new skill. In addition, the girls engaged in overt discussions about self-image and the personal characteristics and behaviors (e.g., being a good friend, getting good grades, and abstaining from substance use) they wished to project as they entered middle school. During the final summer session, each girl proclaimed her goals and commitments in a small ceremony including members of the girl's session group and their foster parents. This ceremony was held to solidify the girls' goals and commitments, to help the girls build self confidence, and to build supportive ties between the girls and their foster parents by “publicizing” their goals and commitments.

Focus for foster parents—The summer intervention for the foster parents was focused on establishing and maintaining stability in the foster home, preparing girls for the start of middle school, and preventing early adjustment problems during the transition to middle school. The foster parents were taught to use a behavioral reinforcement system to encourage adaptive behaviors across home, school, and community settings. The behavioral reinforcement system was focused on typical daily expectations for girls in middle school (e.g., positive behavior at home and in school, attending school, completing homework, completing a chore) and was modeled after systems used in prior studies (i.e., Multidimensional Treatment Foster Care; Chamberlain, 2003). Topics raised by foster parents or identified by the facilitators were integrated into the curriculum as needed. Home practice assignments were provided to encourage foster parents to apply new skills each week. The interventionists were supervised weekly, where videotapes of sessions were viewed and discussed and supervised feedback was provided to help the interventionist maintain adherence to the clinical model. On average, participants completed 5.62 of the 6 sessions ($SD = .99$). On the rare cases where a participant missed a session, the interventionist either went to the families' home to deliver the content in person or delivered the content via a telephone call.

Control Condition

The control girls and foster parents received the usual services provided by the child welfare system, including a variety of services such as referrals to individual or family therapy, parenting classes for biological parents, and case monitoring. Child welfare caseworkers managed each case and were responsible for making all decisions on referrals to community resources, including individual therapy, family therapy, and parenting classes. Services utilized between the T1 and T2 assessments were examined for girls in both conditions. Seventy percent of girls in the control condition received individual counseling, 47% received family counseling, 28% received group counseling, 38% received mentoring, 25% received psychiatric support, and 34% received other counseling or therapy services (e.g., school counseling, academic support). When the types of services received were compared between intervention and control girls, the only significant group difference for services received was mentoring ($p < .001$, intervention girls received more mentoring than control girls), which was expected given the focus on the intervention.

Measures: Outcomes

The Parent Daily Report Checklist (PDR; Chamberlain & Reid, 1987) was used to measure the three T2 outcomes: internalizing problems, externalizing problems, and prosocial behavior. This 34-item measure of child behavior problems was administered by telephone individually to the foster parents and girls on 3 consecutive or closely spaced days (1–3 days apart). The PDR calls were conducted immediately following the T1 and T2 in-person assessments. A trained interviewer asked each foster parent and girl (in separate interviews) whether a list of problem and prosocial behaviors took place during the previous 24 hr (*yes/no* format). The PDR was designed to avoid the potential bias of aggregate recall of frequency estimates (Stone, Broderick, Kaell, DelesPaul, & Porter, 2000). The checklist has been used in previous outcome studies (Chamberlain et al., 2008; Kazdin & Wassell, 2000; McClowry, Snow, & Tamis-LeMonda, 2005), shows stability over time and concurrent validity compared to home observations (Weinrott, Bauske, & Patterson, 1979), and has been shown to significantly predict placement stability for foster children (Chamberlain et al., 2006).

Internalizing problems—An internalizing problems composite was computed based on five PDR items that reflected internalizing behavior (e.g., irritable and nervous/jittery). The scores were averaged across the three calls at T2 ($\alpha = .74$ for foster parents and $.74$ for girls). The foster parent and girl internalizing problem scores were significantly correlated ($r = .64$) and were thus combined into a composite internalizing problem score.

Externalizing problems—An externalizing problems composite was computed based on 18 PDR items that reflected externalizing behavior (e.g., argue and defiant). The scores were averaged across the three calls ($\alpha = .85$ for foster parents and $.81$ for girls). The foster parent and girl externalizing problem scores were significantly correlated ($r = .44$) and were thus combined into a composite externalizing problem score.

Prosocial behavior—A prosocial behavior composite was computed based on 11 PDR items that reflected prosocial behavior (e.g., clean up after herself and do a favor for someone). The scores were averaged across the three calls ($\alpha = .74$ for caregivers and $.75$ for girls). The foster parent and girl prosocial behavior scores were significantly correlated ($r = .38$) and were thus combined into a composite prosocial behavior score.

Measures: Predictors

T1 behavior—T1 internalizing problems, T1 externalizing problems, and T1 prosocial behavior composite scores were computed from the T1 PDR scores using the same variables and methods as described above. The scores were averaged across the three calls at T1 for internalizing problems, externalizing problems, and prosocial behavior ($\alpha = .68, .84, \text{ and } .63$ for foster parents and $.69, .71, \text{ and } .80$ for girls, respectively). The foster parent and girl scores were significantly correlated for internalizing problems ($r = .33$), externalizing problems ($r = .55$), and prosocial behavior ($r = .36$), and were thus combined into composite scores.

Maltreatment history—The girls' cumulative maltreatment history at T1 was coded from child welfare case files using a modified version of the Maltreatment Classification System (MCS; Barnett, Manly, & Cicchetti, 1993), which allows for the coding of different types of maltreatment. The initial training in the use of the MCS was conducted by one of its authors (Manly). The case files included all information on incidents of child maltreatment and family history available to child welfare at the time of the study. The coders examined the child welfare case files to identify incidents of physical and sexual abuse, which had to match the MCS definitions and had to be reported by a mandatory reporter or be founded by the caseworker. Two-thirds of the files were double-coded to compute interrater agreement. Agreement on the identification of the number of physical and sexual abuse incidents was high (85.7% and 86.2%, respectively). For each girl, we calculated a total physical and sexual abuse score by summing the number of physical and sexual abuse incidents that occurred prior to study entry. In this sample, physical and sexual abuse rates for the girls were as follows: 56% had at least one documented incident of physical abuse, 67% had at least one documented incident of sexual abuse, and 82% had at least one documented incident of either physical or sexual abuse.

Pubertal development—The girls' pubertal development was measured at T1 using girl and foster parent reports. Four indicators of development were derived from the Pederson Scales of Development (Peterson, Crockett, Richards, & Boxer, 1988): body hair changes, skin changes, breast growth, and menstruation. Body hair changes, skin changes, and breast growth were measured using a 4-point Likert scale: 1 (*no changes yet*) to 4 (*seems completed*). Menstruation was measured as a dichotomous variable: 1 (*no*) or 4 (*yes*). In addition, the foster parents reported changes in girls' height using a 4-point Likert scale: 1 (*no changes yet*) to 4 (*seems completed*). A pubertal development score was computed using the mean of the four girl-reported items ($\alpha = .62$) and the mean of the five foster parent-reported items ($\alpha = .72$). The girl and foster parent reports of pubertal development were highly correlated ($r = .69$) and therefore averaged to create a mean pubertal development score. These aggregate puberty scores ranged from 1.13–3.58 ($M = 2.23, SD = 0.59$). Of the girls in this sample, 83% had at least some body hair growth ($M = 2.49, SD = 0.94$), 71% had at least some skin changes ($M = 2.14, SD = 0.91$), 91% had at least some breast growth ($M = 2.40, SD = 0.68$), and 94% had at least some change in height ($M = 2.78, SD = 0.64$). Twenty five percent of girls had begun menstruation at T1 ($n = 25$), with the average age of menarche being 11.06 ($SD = 0.82$).

Age—T1 age was included as a covariate based on evidence that early problem behaviors are predictive of subsequent problem behaviors and to control for the modest age variation in this sample (range = 10.44–12.92).

Analytical Approach

The analyses were aimed at examining the immediate effects of the intervention on T2 internalizing problems, externalizing problems, and prosocial behavior. Intervention

condition was the primary predictor variable: 1 (*intervention*) or 0 (*control*). T1 girl age, T1 maltreatment history, T1 pubertal development, and T1 behavior were included as covariates. Separate regression models were conducted for each outcome variable. The variables were entered in a stepwise hierarchical linear regression as follows: Step 1 (T1 age, T1 maltreatment history, T1 pubertal development, and T1 behavior) and Step 2 (intervention condition). The interaction terms among significant predictors were computed and entered in Step 3. None of the interaction terms was significant, and therefore the interaction terms were excluded from the final models.

Results

Descriptives

Correlational analyses indicated that intervention condition was negatively associated with T2 internalizing problems (i.e., the intervention girls had lower levels of T2 internalizing problems). In addition, age was positively associated with T1 pubertal development and T1 internalizing problems, and T1 maltreatment history and T1 pubertal development were positively associated with T2 externalizing problems. T1 and T2 internalizing problems and externalizing problems were positively associated with each other, and both were negatively associated with T1 and T2 prosocial behavior. T1 and T2 prosocial behavior were positively associated with each other. Means, standard deviations, and correlations are shown in Table 1.

Internalizing Problems

As is shown in Table 2, Step 1 of the regression model predicting internalizing problems accounted for 21% of the variance. T1 internalizing problems ($\beta = .41, p < .001$) and T1 maltreatment history ($\beta = .23, p < .05$) were significant predictors of T2 internalizing problems. Step 2 of the regression model accounted for 28% of the variance. Intervention condition ($\beta = -.28, p < .01$), T1 internalizing problems ($\beta = .47, p < .001$), and T1 maltreatment history ($\beta = .23, p < .05$) were significant predictors. The Step 2 final model was significant, $F(5, 83) = 6.51, p < .0001, \Delta R^2 = .073, p < .01$.

Externalizing Problems

Step 1 of the regression model predicting externalizing problems accounted for 44% of the variance (See Table 2). T1 externalizing problems ($\beta = .56, p < .001$), T1 maltreatment history ($\beta = .28, p < .001$), and T1 pubertal development ($\beta = .18, p < .05$) were significant predictors of T2 externalizing problems. Step 2 accounted for 49% of the variance. Intervention condition ($\beta = -.21, p < .01$), T1 externalizing problems ($\beta = .59, p < .001$), T1 maltreatment history ($\beta = .27, p < .01$), and T1 pubertal development ($\beta = .21, p < .05$) were significant predictors. The Step 2 final model was significant, $F(5, 83) = 15.63, p < .0005, \Delta R^2 = .042, p < .01$.

Prosocial Behavior

As is shown in Table 2, Step 1 of the regression model predicting prosocial behavior accounted for 28% of the variance, with T1 prosocial behavior ($\beta = .53, p < .001$) serving as the only significant predictor of T2 prosocial behavior. Step 2 accounted for 30% of the variance, with T1 prosocial behavior ($\beta = .52, p < .001$) remaining as the sole significant predictor. Contrary to our hypotheses, intervention condition was not significant. The Step 2 final model was significant, $F(5, 83) = 7.18, p < .0001, \Delta R^2 = .02, p = ns$.

Discussion

Girls in foster care have been shown to be at high risk for internalizing and externalizing problems, and prior researchers have suggested that the transition to middle school might be a particularly vulnerable period for these girls (Chung, Elias, & Schneider, 1998; Leathers, 2002). Given the lack of research on preventive intervention programs for girls in foster care, the goal of the current study was to examine the immediate impact of a preventive intervention delivered beginning the summer prior to middle school entry. The intervention was aimed at reducing internalizing and externalizing problems during the transition to middle school to stave off the development of more severe problem behaviors in later middle school.

The results from our regression analyses indicate that, compared to the control girls, girls in the intervention condition had significantly lower rates of internalizing and externalizing problems in the fall of the first year of middle school. For example, the intervention girls displayed an average of 1.09 ($SD = .80$) internalizing problems and 2.37 ($SD = 2.11$) externalizing problems per day at T2, whereas the control girls displayed an average of 1.45 ($SD = .96$) internalizing problems and 2.94 ($SD = 2.16$) externalizing problems per day at T2. The significant intervention effects on the immediate reduction in internalizing and externalizing problems are promising for several reasons.

First, girls in the intervention condition had histories of maltreatment as well as emotional and behavioral problems—factors which all increase risk for problems. Despite these risks, their externalizing and internalizing problems *decreased* over the transition to middle school. In addition, prior levels of behavioral risk were controlled, indicating that the intervention prevented further increases in problem behaviors across the 6-month assessment period. These findings suggest that short-term preventive interventions with support during the school year might facilitate an immediate reduction in emotional and behavioral problems for high-risk girls in foster care. Given the well-documented link between internalizing and externalizing problems and impaired social and academic functioning, an immediate reduction in internalizing and externalizing problems could set the stage for a more successful middle school experience.

Our results also showed a significant improvement in agreement between girl- and caregiver-reported internalizing behavior from T1 to T2. Although this was not a specific target of the intervention, it is not surprising that improvement would be found in the agreement between girl and caregiver reports of internalizing behavior given that one of the intervention targets was aimed at improving emotional expression and communication.

Second, the study outcomes were measured using a specific, daily-level indicator of behavior rather than a more global assessment of behavior problems (such as the Child Behavior Checklist; Achenbach & Rescorla, 2001). In addition, a composite score of the girls' and foster parents' ratings across 3 days was used. As such, our results suggest that the intervention produced an immediate reduction in concrete behavior problems that are common in middle school girls (a similar pattern of effects was seen when the data were analyzed separately by reporter).

Third and perhaps most importantly, the intervention was implemented with state-supported foster parents who were not specially selected, was delivered using paraprofessionals rather than master's- or doctorate-level therapists, and was short-term (six sessions over 3 weeks during the summer, followed by weekly sessions during the school year). This service delivery approach was selected specifically to test whether a focused, low-cost intervention that could easily be integrated into existing child welfare services would reduce emotional and behavioral problems in girls in foster care. As such, potential dissemination of this

program into community settings may be more feasible as compared to programs that are more intensive or that rely on heavily specialized staff and/or foster parents.

Despite the positive effects of the intervention on internalizing and externalizing problems, no effects were found for prosocial behavior. There are several possible explanations for the lack of findings in this domain. First, the lack of findings for prosocial behavior might be due to power. Power analyses for the original study indicated sufficient power to detect time by group interaction effects for a sample of 90 for medium and large effects in a multiple regression approach; however, there was insufficient power to detect small or very small effect sizes. Second, perhaps changes in prosocial behavior have a delayed effect. For example, girls with fewer emotional and behavior problems might show subsequent improvements in prosocial behavior (i.e., at 12-months or 24-months postbaseline). Third, the PDR measure may have narrowly assessed prosocial behavior. The majority of items in the prosocial behavior construct are focused on positive behaviors relative to the foster home, whereas the summer intervention was more broadly focused on emotional and behavioral stability relative to helping girls make a successful transition to middle school. The lack of a focus on prosocial behaviors specific to the foster home during the summer intervention may have led to the lack of effects for prosocial behavior.

Our results also indicate that maltreatment history was a significant predictor of T2 internalizing and externalizing problems and that pubertal development was a significant predictor of T2 externalizing problems. The association between maltreatment history and internalizing and externalizing problems is in line with previous research evidence that highlights the negative impact of childhood maltreatment on girls' emotional and behavioral functioning (Edmond et al., 2002). In addition, although prior researchers have suggested that early pubertal development is associated with internalizing and externalizing problems, our results only support an association between early pubertal development and externalizing problems. However, our results were found in a foster care population, whereas most prior work has included more normative populations or those experiencing common family disruptions (e.g., a stepparent) who remain in the primary caregivers' homes (Ellis & Garber, 2000).

In summary, the current results contribute three main findings to the existing research base on girls in foster care. First, the positive immediate effects of the intervention on internalizing and externalizing problems suggest that it is possible to interrupt the negative trajectory of emotional and behavioral problems in girls in foster care, perhaps setting the stage for a more successful middle school experience. Additionally, the highly focused and low-cost nature of the preventive intervention has implications for child welfare budgets. Second, the results substantiate that girls in foster care with maltreatment histories are at high risk for developing internalizing and externalizing problems. Third, the results highlight the relationship between early pubertal development and the development of externalizing problems among girls in foster care.

Limitations and Future Directions

The results of the present study were strengthened by the inclusion of a multimethod, multiagent assessment approach to test the efficacy of a theory-based intervention in an understudied population, controlling for initial levels of risk. Despite the strength of the design, several limitations should be noted. First, the sample was composed entirely of girls; this is a strength because of the understudied nature of the population, but it results in a lack of clarity about whether similar processes exist for boys. Second, the outcomes examined were short term, thus demonstrating only the immediate impact of the intervention. Future research on preventive interventions for girls in foster care should include longer term and additional outcomes such as high-risk sexual behavior, delinquency, and substance use.

Third, the mechanisms underlying the significant improvements in internalizing and externalizing outcomes for the intervention girls were not examined in the present study. Future research should explore potential mediators and moderators of intervention outcomes. Fourth, the study was conducted in a single region of the United States (Pacific Northwest), with approximately half of the participants being drawn from the largest city in the state and half being drawn from a more rural area. Replication in other regions and urban cities is needed before widespread implementation of this intervention would be advisable. These limitations notwithstanding, the results from this study suggests that girls in foster care might benefit from a brief intervention delivered at a key developmental transition (middle school entry).

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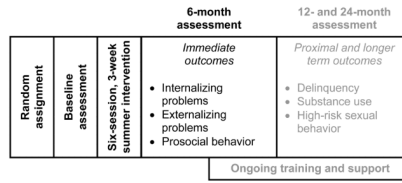


Figure 1.
 Assessment and intervention timeline.
Note. Gray text indicates ongoing/future study elements.

Table 1
Means, Standard Deviations, and Correlations Among Variables Used in Regression Analyses

Variable	1	2	3	4	5	6	7	8	9
1. T1 age									
2. T1 maltreatment history	.01								
3. T1 pubertal development	.36***	.15							
4. T1 internalizing problems	.21*	-.07	.02						
5. T1 externalizing problems	.12	.00	.10	.79***					
6. T1 prosocial behavior	-.12	.07	-.14	-.30**	-.34**				
7. T2 internalizing problems	.11	.19	.06	.40***	.36***	-.11			
8. T2 externalizing problems	.18	.25*	.28**	.47***	.57***	-.23*	.73***		
9. T2 prosocial behavior	-.06	.05	-.02	-.24*	-.21*	.52***	-.38***	-.40***	
10. Intervention condition	-.09	-.01	.04	.12	.11	.12	-.20*	-.13	.18
<i>M</i>	11.54	2.48	2.23	1.51	3.29	8.64	1.27	2.66	8.76
<i>SD</i>	0.48	2.30	0.59	0.96	2.31	1.31	0.90	2.14	1.37

Table 2

Hierarchical Regression Models Predicting Internalizing Problems, Externalizing Problems, and Prosocial Behavior

Variable	Step 1	Step 2
	β	β
Model 1 (T2 internalizing problems)		
T1 age	-.01	-.08
T1 maltreatment history	.23*	.23*
T1 pubertal development	-.01	.04
T1 internalizing problems	.41***	.47***
Intervention condition		-.28**
Model 2 (T2 externalizing problems)		
T1 age	-.03	-.07
T1 maltreatment history	.28**	.27**
T1 pubertal development	.18*	.21*
T1 externalizing problems	.56***	.59***
Intervention condition		-.21**
Model 3 (T2 prosocial behavior)		
T1 age	-.06	-.04
T1 maltreatment history	.01	.01
T1 pubertal development	.09	.07
T1 prosocial behavior	.53***	.52***
Intervention condition		.15

Note. Model 1 Final step model, $F(5, 83) = 6.51***$; Model 2 Final step model, $F(5, 83) = 15.63***$; Model 3 Final step model, $F(5, 83) = 7.18***$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.