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CAN INSTITUTIONALIZED ADOLESCENT FEMALES WITH A SUBSTANTIATED HISTORY OF SEXUAL ABUSE BENEFIT FROM COGNITIVE BEHAVIORAL TREATMENT TARGETING DISRUPTIVE AND DELINQUENT BEHAVIORS?

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The present study examined to what extent adolescent females in residential care with a substantiated history of sexual abuse can benefit from a cognitive behavioral treatment (CBT) targeting disruptive and delinquent behaviors. In total, 104 adolescent females in the treatment group and 78 adolescent females in the comparison group were included in the evaluative design. Latent growth models (LGM) were performed to model change in adolescent females' conduct and anger problems. In the short term, 3 months after the treatment, adolescent females with sexual abuse experiences receiving CBT showed stronger declines in trait anger and anger expression compared with the other groups. Furthermore, in the long term, 18 months after admission, this group of females showed larger declines in proclivity for trading sex compared with the other groups. Results are discussed in the light of the "what works" literature for effective interventions.

Keywords: cognitive behavioral treatment; adolescent females; sexual abuse; residential care; disruptive behaviors; intervention effects

Throughout the last two decades, more adolescent females have been institutionalized for disruptive and delinquent behaviors either under the jurisdiction of the child welfare or the juvenile justice system (Connor, Doerfler, Toscano, Volungis, & Steingard, 2004; Zahn, 2009). This trend has alerted researchers, practitioners, and policymakers to better understand adolescent females' developmental pathways into these behaviors, as well as to more accurately identify the needs of this clientele (Bloom, Owen, Deschenes, & Rosenbaum, 2002; Hubbard & Matthews, 2008; Kerig & Schindler, 2013; Zahn, Day, Mihalic, &

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Tichavsky, 2009). In response to this increased attention, the development of gender-responsive programs has proliferated.

The origin of gender-responsive programming is rooted in the empirical evidence showing quantitative and qualitative differences in the trajectories of disruptive and delinquent behavior among male and female adolescents. Studies demonstrating quantitative differences indicate that female adolescents tend to be less represented in the early onset and chronic trajectory than male adolescents. More precisely, female adolescents tend to follow a low-risk trajectory (Fergusson & Horwood, 2002). Qualitative research, in contrast, has demonstrated differences in the nature of females' pathways into disruptive and delinquent behavior. For instance, Zheng and Cleveland (2013) found that female desisters compared with male desisters tend to be more involved in non-violent than violent delinquency. Similar results were found among adolescent females following the chronic pathway, which was predominantly characterized by chronic drug use rather than by more severe and violent delinquent behaviors (Lanctôt, 2005).

Gender differences have also been identified at the level of risk factors among justice-involved youth. Research has consistently reported more severe mental health problems such as depression and substance abuse, more troubled and conflictual family relationships, runaway behavior, gang affiliation, and more severe sexual abuse victimization among female compared with male justice-involved youth (Belknap & Holsinger, 2006; Chamberlain & Moore, 2002; Chesney-Lind, Morash, & Stevens, 2008; Connor et al., 2004; Fazel, Doll, & Långström, 2008; Hubbard & Pratt, 2002; Kerig & Schindler, 2013; McCabe, Lansing, Garland, & Hough, 2002; Van der Put et al., 2014). These findings altogether have encouraged researchers to look beyond delinquency outcomes of justice-involved females (Lanctôt, 2015) and to understand how certain risk factors not only contribute to the explanation of girls' pathways into delinquency (Brennan & Shaw, 2013), but also how these same factors could hamper girls' pathways out of delinquency. Moreover, these findings suggest that studies focusing solely on illegal delinquent behaviors fail to capture the variety and special characteristics of the deviant and maladaptive behaviors in which females may engage (Lanctôt, 2015). Among these behaviors figure different forms of aggression, drug use, and risky sexual behaviors.

Despite numerous studies highlighting the importance of gender-responsive programs for adolescent females with disruptive and delinquent behaviors (Bloom, 1999; Cantora, Mellow, & Schlager, 2014; Covington & Bloom, 2006; Kerig & Schindler, 2013), few attempts have been made to examine the effectiveness of these programs (Foley, 2008; Hipwell & Loeber, 2006; Kerig & Schindler, 2013; Zahn et al., 2009). Zahn et al. (2009) reviewed 62 programs specifically designed to address adolescent females' delinquency. Among those programs, only 18 had been subjected to empirical testing of any kind, and most of these evaluations were hampered by lack of scientific rigor in the research design (Kerig & Schindler, 2013). Not only did these programs vary widely in their theoretical foundations, approaches, and targeted outcomes, but also few of the evaluative studies used an experimental or quasi-experimental design. It was therefore impossible to determine whether the changes observed could in fact be attributed to the programs. Furthermore, these studies did not show whether the observed effects persisted over time.

The lack of rigorous evaluation studies on gender-responsive programs has encouraged advocates of evidence-based practices to evaluate gender-neutral programs delivered to adolescent females. Gender-neutral programs are generally built on frameworks regarding

good practices for adolescent males. Among these best practices is cognitive behavioral treatment (CBT; Lanctôt, Hauth-Charlier, & Lemieux, 2015; Lipsey, Chapman, & Landenberger, 2001; Lipsey, Landenberger, & Wilson, 2007; McGlynn, Hahn, & Hagan, 2013; Spiropoulos, Spruance, Van Voorhis, & Schmitt, 2005). Possibly, due to flexibility in the delivery of cognitive behavioral programs (e.g., through variation in topics for role-plays to model social skills) and to the individualized components of such programs (e.g., through the completion of self-observations regarding the chain of own cognitions, emotions, and behaviors in a specific situation), institutionalized females can benefit from these interventions, even if they were not originally designed for them (Hubbard & Matthews, 2008; Kerig & Schindler, 2013). For instance, Zahn et al. (2009) identified six “gender-neutral” community programs designed for justice-involved youth that took into account gender differences in their evaluation. Of these programs, five showed similar reductions in delinquent behavior for both adolescent males and females, and one reported more positive outcomes for adolescent females than adolescent males.

To our knowledge, only one study, that of Day, Zahn, and Tichavsky (2015), examined differences in recidivism rates between adolescent females admitted to a gender-responsive program and adolescent females admitted to a gender-neutral program (a behavioral reinforcement program). Although there were no differences in recidivism rates for both groups, subsequent analyses showed that recidivism outcomes did differ when taking into account the level of gender-sensitive risk factors displayed by the adolescent females. Among adolescent females experiencing higher levels of traumatic experiences, depression/anxiety, anger/irritability, alcohol/drugs, and somatic complaints, those who were allocated to the gender-responsive program showed a lower risk of recidivism as compared with those participating in the behavioral reinforcement treatment. Adolescent females with low levels of gender-sensitive risk factors or without such risk factors, however, showed the opposite pattern when admitted to the gender-responsive program. More specifically, their recidivism rates went up two to three times as compared with the adolescent females presenting a similar profile, but admitted to the behavioral reinforcement program.

The study by Day et al. (2015) indicates that research should not only evaluate the effectiveness of programs delivered to institutionalized adolescent females to determine what works, but also establish which programs are better suited for different risk profiles, and thus demonstrate what works for whom. Cauffman (2008) stated, “Even if differences between male and female offenders are confined to only a few key areas, the differences in these areas, such as sensitivity to victimization, can be substantial and can profoundly influence the effectiveness of treatment programs” (p. 131). Notably, 50% to 70% of institutionalized adolescent females self-report a history of sexual abuse (Belknap & Holsinger, 2006; Dixon, Howie, & Starling, 2004; Hamerlynck et al., 2007; Smith, Leve, & Chamberlain, 2006). Official data generally show much lower incidences, of approximately 30% (Hobbs, Hobbs, & Wynne, 1999; Asscher, Van der Put, & Stams, 2015), which is thought to reflect the fear of many victims to disclose to authorities (Milne & Collin-Vézina, 2014).

Child maltreatment, including sexual abuse, has differential effects in adolescent males and females. Waxman, Fenton, Skodol, Grant, and Hasin (2014) studied the effect of gender in the relationship between child maltreatment and personality disorders and found that males generally had an increased risk for antisocial and narcissistic personality disorders, whereas females had a risk for avoidant, paranoid, and schizoid personality disorders. According to the authors, these findings suggest that males generally tend to show acting out behavior after

abuse. Females tend to respond with social withdrawal that would imply a different focus in treatment. From this perspective, the focus of treatment for adolescent males should be on unhealthy attention seeking and acting out behavior, whereas adolescent females would benefit from treatments on the reduction of anxiety and interpersonal avoidance. Therefore, evaluating whether adolescent females in residential care with sexual abuse experiences can benefit from a gender-neutral CBT program that targets acting out behavior and anger management is of crucial importance for knowledge on treatment of this clientele, in particular as a part of their recovery from trauma experiences (Saxena, Messina, & Grella, 2014).

The current study was designed to examine to what extent adolescent females in residential care with a substantiated history of sexual abuse could benefit from CBT. The current study adds to the limited research on evidence-based practices for females, using a relative rigorous study design. Among the outcomes, a range of conduct problems such as aggression, drug use, and anger problems have been studied. The CBT under study was a gender-neutral program implemented in nine adolescent female-only groups of a residential facility and developed for adolescents showing disruptive or delinquent behaviors (Le Blanc, Dionne, Proulx, Grégoire, & Trudeau-LeBlanc, 1998).

METHOD

PARTICIPANTS

The present study is part of the Montreal Study on Adolescent Girls in Residential Youth Centers (Lanctôt, 2011), which was carried out between January 2008 and October 2009. All girls admitted to nine residential units of a Youth Care center in Quebec, Canada, were invited to participate in the study. Of the 189 adolescent females that were approached for the treatment group, 157 agreed to participate (83%). Another 184 adolescent females admitted to residential units in other Youth Care centers—not implementing CBT—were contacted for the comparison group. Of this latter group, a similar percentage (88%) agreed to participate in the study ($n = 162$).

Only adolescent females that were placed in the Youth Care center for at least 3 months, and thus being significantly exposed to either the Treatment As Usual (TAU) or the CBT, were included in the final sample of the study ($n = 182$). Crucially, adolescent females were not randomly assigned to either the treatment ($n = 104$; $M = 14.67$, $SD = 1.29$) or comparison ($n = 78$; $M = 15.74$, $SD = 1.08$) group. Apart from the participants who left the residential facility prior to 3 months ($n = 108$), reasons for non-participation included refusal ($n = 13$), logistic difficulties such as schedule conflicts ($n = 10$), and severe psychological problems ($n = 2$). Also, four adolescent females did not participate because either they ran away ($n = 2$) or because we could not find them ($n = 2$). The retention rates reported in the current study, as displayed in Table 1, are similar to those reported in other studies conducted with a similar clientele and time frame (Bryan, Schmiege, & Magnan, 2012).

Participation in the study was voluntary, and parental consent was acquired for all adolescent females aged 14 or younger. The data collection procedure was approved by the Institutional Review Board of the University of Sherbrooke, Canada.

PLACEMENT CHARACTERISTICS

Adolescent females who participated in this evaluative study were all living in residential youth centers operated by the Child Welfare system of the province of Quebec, Canada.

TABLE 1: Sample Size and Retention Rates Across the Treatment and Comparison Group Over the Different Time Points

	T1 (Admission)	T2 (3 Months)	T3 (6 Months)	T4 (12 Months)	T5 (18 Months)
Treatment group	<i>n</i> = 104 (100%)	<i>n</i> = 104 (100%)	<i>n</i> = 82 (79%)	<i>n</i> = 78 (75%)	<i>n</i> = 96 (92%)
Comparison group	<i>n</i> = 78 (100%)	<i>n</i> = 78 (100%)	<i>n</i> = 54 (69%)	<i>n</i> = 48 (62%)	<i>n</i> = 61 (78%)

Under this act, such placement is considered a last resort, reserved for young people with serious adjustment problems, because of the nature, severity, and frequency of their manifestations. All youth centers in Quebec provide young people and their families with services based on the principles of psychosocial rehabilitation. Youth who are placed in residential facilities are supervised and supported by qualified practitioners, including psychoeducators, psychologists, social workers, and criminologists (Association des Centres Jeunesse du Québec [ACJQ], 2012). Services include individual and group supervision, and support through daily life experiences that young people and practitioners share within the residential unit.

In the present study, the main motives associated to the placement were behavior problems (44.0%), neglect (24.4%), psychological abuse (5.0%), physical abuse (6.5%), sexual abuse (7.5%), and abandonment (2.5%). Another 8.5% of the adolescent females had been placed in residential care because of family crises, after other measures had proven insufficient.

CBT

The treatment group was composed of adolescent females placed in a youth center that implemented a CBT program, which was developed by Le Blanc et al. (1998) for adolescents with disruptive or delinquent behaviors. The aim of the program was to reduce anti-social cognitions and behaviors, by means of cognitive restructuring and the teaching of prosocial alternative behaviors. The program relies on both individual and group activities. Individual activities included evaluative analyses (functional and excess-deficit analyses), self-observations, and a behavioral contract. The group component of the program consisted of four workshops targeting successively communication skills, anger regulation, stress management, and problem solving. Each workshop consisted of 12 to 15 sessions. Although this program was initially defined without regard to gender, it was nevertheless implemented in nine residential units of an adolescent female-only residential facility in Quebec, Canada.

TAU

The comparison group was composed of adolescent females placed in residential centers that did not implement the CBT program. The TAU does not refer to a specific program, but rather to a set of services offered in a therapeutic environment promoting the rehabilitation of the adolescent females. The services offered were tailored to the specific risk and needs of each adolescent female through individualized intervention plans. Group activities focusing on self-esteem, sexual education, drug prevention, sports, and arts were part of the regular services.

TABLE 2: Means and Standard Deviations of all Outcome Variables Over the Different Time Points

	T1 (Admission)	T2 (3 Months)	T3 (6 Months)	T4 (12 Months)	T5 (18 Months)
Aggression	2.06 (0.83)	1.75 (0.61)	1.62 (0.58)	1.60 (0.47)	1.65 (0.55)
Gang affiliation	2.64 (1.68)	2.10 (1.49)	1.77 (1.30)	1.66 (1.18)	1.62 (1.13)
Cannabis use	2.29 (2.10)	1.34 (1.64)	1.36 (1.78)	1.27 (1.66)	1.68 (1.87)
Sex trade	1.28 (0.62)	1.20 (0.52)	1.17 (0.46)	1.13 (0.42)	1.16 (0.45)
State anger	2.05 (0.92)	1.84 (0.90)	1.77 (0.90)	1.60 (0.78)	1.61 (0.77)
Trait anger	2.59 (0.72)	2.43 (0.73)	2.30 (0.73)	2.28 (0.73)	2.32 (0.69)
Anger expression	2.63 (0.75)	2.49 (0.73)	2.36 (0.69)	2.35 (0.62)	2.40 (0.69)
Anger management	2.17 (0.74)	2.30 (0.72)	2.49 (0.76)	2.45 (0.66)	2.45 (0.71)

MEASURES

See Table 2 for an overview of the means and standard deviations of the outcome variables at each time point.

Conduct Problems

Aggression. A French adaptation of the Direct and Indirect Aggression Scales measure (DIAS; Björkqvist, Lagerspetz, & Osterman, 1992) was used. This adaptation has been validated with a clinical sample of French-Canadian adolescent males and females (Pauzé et al., 2004). The aggression index comprises 20 items reflecting physical (e.g., hitting, slapping, scratching, and pinching), verbal (e.g., insulting, threatening, and yelling), and indirect aggression (e.g., shutting someone out of the group, saying bad things about someone behind their back, and telling false stories about someone). All questions were rated on a 5-point Likert-type scale, ranging from 1 (*never*) to 5 (*very often*). For the purpose of the current study, all items were merged into one scale. In our sample, the Cronbach's alphas for the five time points of the total aggression scale ranged from .88 to .94.

Gang affiliation. One item in our questionnaire assessed the frequency of contacts between the adolescent female and members of street gangs. This item was rated on a 5-point Likert-type scale, ranging from 1 (*never*) to 5 (*very often*).

Cannabis. The frequency of cannabis use was measured with one item from the Screening of Problematic Alcohol and Drug Use Among Adolescents and Teenagers Questionnaire (DEP-ADO; Germain et al., 2005). This questionnaire has been validated with a clinical sample of French-Canadian adolescent males and females (Germain et al., 2005). The item was rated on a 6-point Likert-type scale ranging from 1 (*never*) to 6 (*every day*).

Proclivity for sex trade. Proclivity for sex trade was assessed using a six-item scale. Four of the items measured solicitation of prostitution (e.g., being offered gifts, money, drugs, or promises in exchange for sexual favors). These items were taken from the Manual on Measures of Social and Personal Adjustment for Adolescents in Quebec (MASPAQ), a self-reported delinquency questionnaire that has been validated with a sample of justice-involved adolescent males and females (Le Blanc, 1996). Two others items were added to assess nude dancing (at private parties or in clubs). All questions were rated on a 5-point Likert-type scale, ranging from 1 (*never*) to 5 (*very often*). The Cronbach's alphas for the five time points of this scale were ranging from .82 to .87 in our sample.

Anger. Various dimensions of anger were measured with the State-Trait Anger Expression Inventory–2 (STAXI-2; Spielberger, 1999). The self-report measure consisted of 57 items, which were rated on a 4-point Likert-type scale ranging from 1 (*almost never*) to 4 (*almost always*). For the purpose of the current study, the following subscales were used: State Anger, Trait Anger, Anger Expression, and Anger Management. State Anger reflects the intensity of an individual's angry feeling while Trait Anger evaluates an individual's general disposition to become angry. In contrast, Anger Expression reflects the extent to which an individual expresses his or her anger, and Anger Management refers to how often an individual is able to reduce angry feelings adequately. The Cronbach's alphas for the five time points of each scale ranged between .96 and .96 (State Anger), .86 and .88 (Trait Anger), .82 and .87 (Anger Expression), and .90 and .97 (Anger Management).

History of sexual abuse. A history of sexual abuse was based on official reports of substantiated sexual abuse by Child Protection Services, Quebec, Canada. The reports were collected retrospectively and covered all substantiated child abuse up to the adolescent female's admission to the residential facility. Similar percentages of substantiated sexual abuse were reported among the treatment (14.4%) and comparison group (17.9%), respectively.

PROCEDURE

This evaluative study included five measurement waves, in which adolescent females, under the supervision of graduated research assistants in psycho-education, completed self-administered questionnaires (see below) about their attitudes and behaviors. The first measurement was performed during the first 2 weeks after the adolescent female's admission to the residential center (Time 1 [T1]). The other measurements were conducted 3 months (Time 2 [T2]), 6 months (Time 3 [T3]), 12 months (Time 4 [T4]), and 18 months (Time 5 [T5]), respectively, after admission.

For the first 3 months (from the T1 to T2), all participants were living at the youth centers although they were allowed to spend some time out into the community to promote their re-entry into society. Six months after admission (T3), some of the adolescent females had been released from the centers, in which case the questionnaires were administered at their homes. At T3, T4, and T5, each adolescent female was invited to participate in the follow-up event even if one measurement was skipped. This sampling strategy allowed maximizing of the sample size and final retention rate.

ANALYTIC STRATEGY

Preliminary analyses were conducted to examine whether there were significant differences between the treatment and the control group. According to the results, the comparison group was significantly older than the treatment group, $t(180) = 5.95, p = .001$. Therefore, age was controlled for in the model.

The main analyses were conducted in a structural equational framework using the Mplus program (version 5.1; Muthén & Muthén, 2006). Latent growth models (LGM) allow the examination of both intra-individual change over time (within person) and inter-individual developmental trajectories (between person change; Mcardle & Epstein, 1987).

LGM test both linear and non-linear growth and identify covariates that affect the developmental change of individuals (Duncan, Duncan, & Strycker, 2006; Duncan, Duncan, Strycker, & Chaumeton, 2007). An advantage of Mplus is that it allows for missing data by

using the principle of maximum likelihood estimation. Furthermore, it can also be used with non-normal distributed data (Muthén & Muthén, 2006).

Previous analyses indicated that a piecewise model best fit the data (Lanctôt et al., 2015). The piecewise modeling approach assumes slope discontinuity and allows to estimate slopes for each identified segment (Li, Duncan, Duncan, & Hops, 2001). For the current study, two slopes were estimated, one for the first 3 months of placement in the residential facility (T1-T2) and one for the follow-up period (T3-T5) until 18 months after admission.

Three models were used to determine the extent to which adolescent females with sexual abuse histories can benefit from CBT. The first model presents the main effect of the CBT program on the trajectories of disruptive and delinquent behaviors. The second model shows the main effect of sexual abuse on the program effect, while the third model presents the interaction term between the CBT program and sexual abuse. For each model, age has been regressed on the intercept. Also, at each follow-up, we controlled for whether the respondent was currently living in one of the residential facilities or not.

The model fit was determined by three of the most respected and reported fit indices (Hooper, Coughlan, & Mullen, 2008), namely, the chi-square test, the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). CFI cutoff values of .90 or greater indicate acceptable fit and .95 or greater indicate a good fit. For the RMSEA, values between .05 and .08 indicate an acceptable fit and values less than .05 a good fit (Hu & Bentler, 1999; McDonald & Ho, 2002).

For comparison of the effectiveness of the CBT and TAU, we calculated effect sizes (d) of both the short- (T1-T2) and long-term (T3-T5) change. For the interpretation of the magnitude of the effect sizes, Cohen's (1988) classification was used, distinguishing between $d = .20$ (small effect), $d = .50$ (medium effect), and $d = .80$ (large effect).

RESULTS

TIME OF ADMISSION

An overview of the results is reported in Table 3. At time of admission, adolescent females admitted to either the treatment or comparison group showed equal levels of conduct and anger problems. Only with respect to managing anger, adolescent females in the treatment group reported more difficulties than the comparison group ($\beta = -.12$, $p = .04$, $d = .18$). Furthermore, at time of admission, no differences were found with respect to the level of conduct and anger problems between adolescent females with and without a substantiated history of sexual abuse. In addition, no interaction effects were found between the treatment condition and the presence of substantiated sexual abuse, indicating that adolescent females with a substantiated history of sexual abuse enrolled in the CBT program had similar levels of conduct and anger problems compared with the other groups at time of admission (non-abused treatment, non-abused comparison, and sexually abused comparison group).

SHORT-TERM EFFECTS (3 MONTHS AFTER ADMISSION)

Three months after admission to the program, adolescent females from the treatment group showed significant but small declines in gang affiliation ($\beta = -.19$, $p = .05$, $d = .22$), trait anger ($\beta = -.11$, $p = .02$, $d = .23$), and anger expression ($\beta = -.10$, $p = .04$, $d = .22$). A small improvement was observed for anger management skills ($\beta = .14$, $p = .01$, $d = .26$). A

TABLE 3: Piecewise Growth Model of Effect of Program and Effect of Sexual Abuse on Conduct and Anger Problems

	Aggression	Gang affiliation	Cannabis	Sex trade	State anger	Trait anger	Anger expression	Anger management
Initial intercept								
Program effect	-0.03	-0.03	-0.02	-0.07	0.08	0.04	0.00	-0.12*
Sexual abuse	0.02	0.02	0.16	0.04	0.03	0.02	-0.02	0.02
Interaction program × sexual abuse	0.05	-0.08	-0.05	0.08	0.02	0.08	0.05	0.02
Slope T1-T2								
Program effect	-0.09	-0.19	-0.48**	0.03	-0.13	-0.11*	-0.10*	0.14**
Sexual abuse	0.01	-0.01	0.05	-0.03	-0.08	-0.08	0.01	-0.01
Interaction program × sexual abuse	-0.06	0.20	-0.10	-0.01	-0.08	-0.13**	-0.11*	0.08
Slope T2-T5								
Program effect	0.03	0.03	0.11*	-0.02	0.00	-0.01	0.00	0.02
Sexual abuse	-0.03	-0.03	-0.10*	0.00	0.01	0.01	-0.01	0.02
Interaction program × sexual abuse	0.00	-0.05	0.02	-0.04*	-0.01	0.03	0.03	-0.03
Goodness of fit								
χ^2	46.60	43.58	35.16	39.38	37.35	27.16	31.05	42.43
df	29.00	29.00	29.00	29.00	29.00	29.00	29.00	29.00
<i>p</i> value	.02	.04	.20	.09	.14	.56	.36	.05
CFI	0.91	0.93	0.98	0.92	0.93	1.00	0.99	0.94
RMSEA	0.06	0.05	0.03	0.04	0.04	0.00	0.02	0.05

Note. CFI = comparative fit index; RMSEA = root mean square error of approximation; df = degrees of freedom. * $p < .05$. ** $p < .01$. *** $p < .001$.

moderate effect was found for the decline of cannabis use ($\beta = -.48$, $p = .001$, $d = .40$). However, no significant effect was found with respect to proclivity for sex trade.

Adolescent females with or without substantiated histories of sexual abuse did not differ with respect to their levels of conduct and anger problems 3 months after the admission. Finally, adolescent females from the treatment group with a substantiated history of sexual abuse showed larger declines in trait anger ($\beta = -.13$, $p = .01$, $d = .26$) and anger expression ($\beta = -.11$, $p = .02$, $d = .23$) than adolescent females from the other groups (non-abused treatment, non-abused comparison, and sexually abused comparison group). Both effects were small.

LONG-TERM EFFECTS (6 TO 18 MONTHS AFTER ADMISSION)

The gap found between adolescent females of the treatment and comparison group at 3 months remained constant for most outcomes up to 18 months after admission. Namely, no additional beneficial effects of the CBT program were found for gang affiliation, aggression, and the anger outcomes. Contrary to expectation, some increases in cannabis use ($\beta = .11$, $p = .02$, $d = .30$) were reported in the treatment group. Despite the slopes differences, adolescent females from the treatment group did not report a higher involvement in these problem behaviors at the end of the evaluative period than the comparison group.

Second, the trajectories of conduct and anger problems evolved in a similar fashion between 6 and 18 months after admission for the adolescent females with and without a

substantiated history of sexual abuse. Only one exception was observed, in that adolescent females with a substantiated history of sexual abuse reported a larger decline in cannabis use ($\beta = -.10, p = .03, d = .27$) compared with adolescent females without such a history. This effect was small.

Finally, adolescent females from the treatment group with a substantiated history of sexual abuse showed a larger decline in proclivity for sex trade ($\beta = -.04, p = .03, d = .63$) than the other groups between 6 and 18 months after admission. This effect could be considered large.

DISCUSSION

The aim of the current study was to examine the extent to which adolescent females in residential care with substantiated histories of sexual abuse could benefit from a gender-neutral CBT program targeting disruptive and delinquent behaviors. The current study showed that the effects of the CBT program under study were similar or even stronger for adolescent females with a substantiated history of sexual abuse than for adolescent females without such a history. More specifically, in the short term, adolescent females with a substantiated history of sexual abuse receiving CBT showed stronger declines in trait anger and anger expression. This finding could be viewed in the light of a complex developmental trauma framework in which interventions such as CBT can teach sexually abused adolescent females to connect their emotions, such as anger, to previous traumatic experiences in a safe environment, as an important step in their recovery of the trauma (Herman, 1992, 1997).

In the long term, adolescent females with a substantiated history of sexual abuse showed larger declines in proclivity for sex trade compared with the other groups. This finding is comparable with findings from meta-analytical studies showing medium to large effects of CBT on sexualized behavior ($d = .48$) of children and adolescents with a history of sexual abuse (Macdonald et al., 2012; Meca, Alcázar, & Soler, 2011). Macdonald et al. (2012), differentiating between short- and long-term effects, showed that the effects of CBT on sexualized behavior among adolescent females with previous sexual abuse experiences did not occur directly after treatment but only 1 year of treatment. A similar delay occurred in our study, with declines starting after 6 months. Such a result is highly relevant for the development of promising programs considering that adolescent females with a history of sexual abuse report higher sexual risk taking behavior than adolescent females without such a history (Raj, Silverman, & Amaro, 2000). Finkelhor and Browne (1985) suggest that a traumatic dynamic in sexually abused children and adolescents alters their emotional and cognitive orientation to the world in that they suffer from feelings of stigmatization, betrayal, and powerlessness and develop an inappropriate and dysfunctional sexuality including proclivity for sex trade. Possibly, sexually abused adolescent females need more time to recognize the chain between cognitions and emotions resulting from the abuse and their behavior, which may have resulted in a delayed effect of the program on proclivity for sex trade.

Our findings suggest that institutionalized adolescent females with substantiated histories of sexual abuse can benefit from gender-neutral CBT programs, and is in line with previous studies showing positive effects of CBT for females with similar characteristics (Day et al., 2015; McGlynn et al., 2013; Spiropolous, Spruance, Van Voorhis, & Schmitt, 2005; Zahn et al., 2009). Although only few effects were found, the current findings should

not be dismissed given that the comparison group is also supervised by qualified educators in a rehabilitative context while focusing on the individual risk and needs of these females. In addition, the specific effects found for adolescent females with sexual abuse histories in regard to trait anger, anger expression, and proclivity for sex trade could all contribute to a reduction of both offending and re-victimization in their transition toward emerging adulthood. Possibly, the strength of the CBT program lies in its ability to both individualize and accommodate the content of the program to the specific needs of the adolescent female (Andrews & Bonta, 2010; Hubbard & Matthews, 2008). For instance, the CBT under study used auto-observations to teach the adolescent female to unravel chains between their thoughts, emotions, and behaviors. Also, group activities, including role-plays, were centered on topics that are of importance for institutionalized adolescent females such as proclivity for sex trade. Kerig and Schindler (2013) state that program accommodation figures among the core principles of evidence-based practice. A program should be flexible in its application without jeopardizing the program's theoretical framework. In this way, programs can better respond to the risks and needs of specific and diverse clientele.

Some limitations of this study should be mentioned. First, this study relied exclusively on officially and not self-reported data regarding sexual abuse. Official reports generally underestimate the actual prevalence of sexual abuse (Swahn et al., 2006). Consequently, some sexual abuse experiences may have remained unidentified, which could have obscured our findings. To specify, a total of approximately 16% of adolescent females in this study had a substantiated history of sexual abuse. Notably, this is nearly half of what is reported in other studies relying on officially reported data (Asscher et al., 2015; Hobbs et al., 1999). Moreover, this percentage is in sharp contrast with rates found among self-reported data, namely, 70% (Belknap & Holsinger, 2006; Dixon et al., 2004; Hamerlynck et al., 2007; Smith et al., 2006). On the other hand, official (substantiated) reports of child sexual abuse have been validated with external sources and generally include the more serious cases. In addition, more severe forms of abuse have shown to better predict negative outcomes including conduct and anger problems than the occurrence of abuse in itself (Clemmons, Walsh, DeLillo, & Messman-Moore, 2007; Higgins, 2004). Possibly, the use of multiple sources for the identification of child sexual abuse may overcome the problem of underestimation (Widom, 1988).

Second, all outcome measures were based on self-reported data and possibly subject to social desirable answering or denial. For instance, Breuk, Clauser, Stams, Slot, and Doreleijers (2007) showed that self-reported screening instruments for psychopathology, aggression, and relationship quality did not yield valid scores among juvenile delinquents in day treatment for psychiatric and behavioral problems. In contrast, parents of the juveniles did report significantly elevated scores on the majority of the scales measured. The authors suggest that in case of youth with severe problem behaviors, a multi informant approach is essential to prevent underestimation.

Third, the present study relied on a relative small sample of institutionalized adolescent females with a history of sexual abuse. Although attrition rates were low and similar to attrition rates in other studies with similar clientele and time frame (Bryan et al., 2012), the insignificant results in the second slope may have been caused by lack of power.

Finally, the adolescent females in the comparison group did not receive a specific type of treatment, but rather a set of services responsive to the individual risks and needs of the adolescent females. Which activities the adolescent females were enrolled in and the extent

to which they were exposed to certain services was not monitored. We were therefore not able to determine which (combinations of) specific services or activities of the CBT caused the beneficial effects.

In sum, the current study showed a gender-neutral CBT program to have some beneficial effects for institutionalized adolescent females with sexual abuse experiences, both in the short term and long term, relevant to their development and security. Future research should not only demonstrate the effectiveness of programs for adolescent females and identify which adolescent females treatment programs work, but also identify underlying key mechanisms that account for the change in conduct problems (Kerig & Schindler, 2013).

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