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ACT Parenting Program: A pilot study with observational measures of parent-child interaction*

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ABSTRACT – Considering the lack of studies involving primary prevention of child abuse, this pilot study aimed to evaluate the effectiveness of the ACT Parenting Program, a universal violence prevention program, through observational measures of parent-child interactions and parental self-report. The study included 10 parents, randomly assigned to wait-list control group (CG) and experimental group (EG), with pre-test/post-test/follow-up measures. The observation sessions were conducted in a lab-house with one-way mirror and filming equipment. Comparing the groups, the EG had a significant increase in self-reported problem-solving skills after program completion. However, no differences were found among observational measures. Further studies are required to attest the effectiveness of the program with behavioral measures.

KEYWORDS: parent training; program evaluation; violence prevention; parent-child interaction.

Programa Parental ACT: Um Piloto com Medidas Observacionais da Interação Cuidador-Criança

RESUMO – Considerando a escassez de estudos que visem a prevenção primária da violência contra crianças, o presente estudo piloto avaliou a efetividade do programa parental ACT por meio de medidas observacionais da interação pais-filhos e de autorrelato dos pais. Participaram do estudo 10 pais, divididos randomicamente em grupos experimental (GE) e controle (GC) de espera, submetidos a medidas de pré-teste/pós-teste/*follow-up*. As sessões de observação foram conduzidas em uma casa-laboratório com espelho unidirecional e equipamentos de filmagem. Comparando-se os grupos, o GE apresentou aumento significativo da habilidade de resolução de problemas após a intervenção. No entanto, não foram encontradas diferenças dentre as medidas observacionais avaliadas. Novos estudos são necessários a fim de verificar a efetividade do programa por meio de dados observacionais.

PALAVRAS-CHAVE: treino parental, avaliação de programa, prevenção de violência, interação pais-criança

The fight against child abuse has been widely discussed in Brazil, especially after the approval of the law against corporal punishment, known as "Lei Menino Bernardo" (Law n. 13.010, 2014), which amends the Child and Adolescent Statute – ECA (Law n.8.069, 1990), highlighting the right of children and youth to be educated and cared for without the use of corporal punishment or any kind of cruel or degrading treatment. Literature data point to negative consequences for the physical, cognitive and psychological development of these children (Krug et al. 2002; Pinheiro, 2006). However, research aimed at the universal prevention of child abuse, which scientifically support public policies with this objective, are still scarce in Brazil and in the world.

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CHILD ABUSE

According to the *World Health Organization* (WHO, 1999), violence against children, child abuse or maltreatment includes all types of physical and/or emotional violence, sexual abuse, neglect, negligence and commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity, in the context of a relationship of responsibility, trust or power. Brazil presents a worrying panorama on the subject. The annual balance of data on allegations of human rights violations received by the Brazilian Human Rights Hotline (Ouvidoria Nacional de Direitos Humanos, 2019) indicated that 55% of the complaints registered in 2018 focused on children and adolescents, constituting these as the greatest victims of rights violations in Brazil: it is estimated that an average of 9 complaints are registered every hour with more than one victim, numbers that are certainly higher if we take into account the frequent underreporting of such crimes. The most prevalent complaints were, respectively: negligence, psychological abuse, physical abuse and sexual abuse; and the victim's home was the place with the highest rate of violations (60% of cases). According to a survey by Datafolha (2010) with more than 10,000 Brazilians aged 16 and over, 72% of children and adolescents in Brazil suffer abuse from their parents during the educational process. Pinheiro and Williams (2009) carried out a study with 239 elementary school students from the interior of the state of São Paulo, in which 60% of the participants reported having suffered physical abuse from the father, while 91.6% of boys and 80.8% of girls reported having been a victim of violence committed by their mothers; only 15% of participants reported not having been victims of any form of violence committed by their parents.

The phenomena of *intergenerationality* and *polyvictimization* are aggravating to the perpetuation of violence. Intergenerationality is the tendency to repeat patterns, traditions, rituals and legacies from one generation to another (Kaufman & Zigler, 1993), while polyvictimization is the perpetration of four or more different types of violence against a child within a period of one year, data found in 22% of Finkelhor's sample (2011), according to which there is a greater probability of suffering other types of violence when one is already a victim of any type of violence. Scientific evidence indicates an association between being a victim of childhood violence and later experiencing violence as a victim or aggressor (Butchart et al., 2006).

Child abuse is generally associated with other serious family problems. It may be seen as a "relational psychopathology", because of the inadequate relationship established between the parents, the child and the environment (Wolfe, 2010). Such an inadequate relationship, often generated by a deficit in the problem-solving repertoire, parental skills and impoverished emotional control of caregivers, leads them to use violence to discipline their children. According to a survey by IBOPE, published in *Jornal do Estado de São Paulo* [The State of São Paulo Newspaper] (Balmant & Lenharo, 2012), which heard more than two thousand people in 18 Brazilian state capitals, Brazilian parents are still unaware of the importance of establishing emotional bonds with their children. In the survey, 51% of respondents answered that the main contribution of parents to the development of children aged 0 to 3 years old is taking them to the pediatrician regularly and providing the vaccines. However, only 19% considered playing, walking and talking as important and only 8% considered socializing with other children important.

The positive involvement of parents in their children's education, establishing a welcoming family environment, with adequate standards of communication and participation in their children's activities, favors children's social development and acts as a protective factor in the face of threatening events that children tend to experience (Del Prette & Del Prette, 2005). In this context, there is a need to carry out intervention programs with parents or caregivers, in order to teach them more appropriate parenting skills and strategies to raise children, thus favoring the development of healthy relationships between parents and children and preventing violence in children's lives.

In Brazil, violence prevention programs and, especially, research on the effectiveness of such programs are scarce. According to WHO (2007), there are more than 300 violence prevention programs among young people aged 15 to 24 being developed in Brazil. However, child abuse prevention programs are rarer. Only two parenting programs to prevent child abuse are known to search for scientific evidence in Brazil: the *Programa de Qualidade na Interação Familiar* [Quality in Family Interaction Program] (Weber et al., 2011) and the *Projeto Parceria* [Partnership Project] (Williams, Maldonado, & Araújo, 2008; Williams, Maldonado, & Padovani, 2008). The first one deals with universal prevention, parenting guidance and training, and the second is a secondary or tertiary prevention program for women with a history of domestic violence.

The *Organización Panamericana de la Salud* (OPS, 2013) published a report on violence prevention, which raises three current needs in this area: more rigorous evaluations of prevention programs in the world, using child maltreatment as a criterion and not just the associated risk factors; more studies evaluating the effectiveness of such programs in terms of their economic costs and benefits; and the investigation of the applicability and effectiveness of violence prevention programs in developing countries. Faced with the need to evaluate the effectiveness of prevention programs and considering the scarcity of programs evaluated in Brazil, this study aims to analyze a program included in the range of child abuse prevention programs, with a view to substantiate public policies that comply with Law n.13.257 (2016) on early childhood in Brazil.

THE ACT RAISING SAFE KIDS PROGRAM

The *ACT* (Adults and Children Together against violence) *Raising Safe Kids Program* is a parenting training program of universal violence prevention that aims to mobilize communities and educate families and caregivers to protect children and adolescents from violence before it does occur (Silva, 2011). Developed by the American Psychological Association (APA) and the National Association for the Education of Young Children (NAEYC), the ACT Program is based on scientific research that demonstrates that a child's early years (0-8 years) are considered critical for learning basic skills that will have a long-term impact on their lives (Guttman & Mowder, 2005).

It is a social cognitive intervention program based on the Social Learning Theory (Bandura, 1977), which stems from the idea that children learn through observation and imitation. Applied in more than 80 communities in different countries (Howe et al., 2017), it was listed by the World Health Organization as one of the three effective parenting programs on child maltreatment prevention (WHO, 2015). The program aims to help adults teach and model behavioral strategies in children, such as managing anger and solving social problems, thus reducing and preventing violence in children's lives (Guttman & Mowder, 2005; Silva & Randall, 2005). It consists of a Pre-Program Meeting and eight interactive two-hour sessions that address important skills for violence prevention: anger management, social problem-solving, discipline, and media violence (Guttman & Mowder, 2005).

Since 2001, research studies have evaluated the efficacy or effectiveness of the ACT Program. In the literature review carried out by Pontes et al. (2019), they found 13 empirical studies published until 2018: three evaluating the ACT workshop for professionals and ten evaluating the ACT training for parents or caregivers. In all studies, reports of caregivers and children indicated positive results: three in terms of efficacy, i.e. with maximum experimental rigor, and the others in terms of program effectiveness or lesser methodological rigor. However, the main limitations of the studies, raised by Pontes et al. (2019), were as follows: in eleven of the studies the data were based solely on self-reports, nine studies did not use follow-up measures, six did not have a control group for comparison and four used non-randomized distribution of groups. A frequent suggestion in evaluation studies of the ACT Program is the use of observational measures of behavior or caregiver-child interaction, in order to assess effective changes in the behavior of professionals or caregivers after the intervention. The use of observational measures of parental behavior is considered superior in criteria, but more complex and costly for both researchers and participants, especially in low and middle-income countries, where investment in research is usually lower (Altafim & Linhares , 2019).

In Brazil, four studies evaluating the effectiveness/ efficacy of the ACT Program were published (Altafim & Linhares, 2019; Altafim et al., 2016; Pedro et al., 2017; Silva & Williams, 2016) so far, all with women (mothers) and having as an innovation the use of third-party reports as a data source: a case study with pre-test, post-test and follow-up measures (Silva & Williams, 2016), two pre-experimental studies with only one group and pre- and post-test measures, one comparing the effectiveness of the program according to the children's age (Altafim et al., 2016), and another comparing families from different socioeconomic levels (Pedro et al., 2017); and the fourth and last study published in Brazil is the first experimental evaluation study of the ACT Program outside its home country and the first to evaluate the program's efficacy on the children behavior reported by caregivers (Altafim & Linhares, 2019).

In this context, this study represents a groundbreaking initiative, because not only it is one of the first experimental studies of the ACT Program in Brazil, but also and mainly because it is the first to assess a mixed group of fathers and mothers in the country and to incorporate observational measures never used beforehand in the program evaluation. Therefore, the aim of the present study is to conduct an experimental pilot study to assess the effectiveness of the ACT Program in parents or caregivers and their respective children, based on observational measures of caregiver-child interaction and caregiver self-report data.

METHOD

Participants

Ten parents participated in the study, selected according to the following criteria: having children from 1 to 8 years old, being available to participate in business hours and agreeing to voluntarily participate in the program by signing the Informed Consent Form (ICF). The age range was chosen considering the age covered by the ACT Program and the requirement to administer the instruments. Although 11 participants from the Experimental Group (EG) attended between 1-4 sessions of the program, only five reached the minimum attendance criterion (five sessions) and were considered for data analysis. At the end of the intervention with the EG, only five participants in the Control Group (CG) were available for a second assessment, since such data collection took place close to a national holiday. These five participants were part of the study until the end, also

receiving later intervention. Nine participants were women, with a mean age of 33 years old, all married and parents of only one child, except for one EG participant, the youngest in the sample (23 years old), mother of two.

Instruments

We chose the research instruments based on the following criteria: (i) knowledge and skills worked in the ACT Program (parenting styles, social problem-solving and parental behavior), (ii) capacity of the instruments to assess the construct of interest, and (iii) history of use in other studies. Thus, we selected the following research instruments:

- *Observation Protocol*: Protocol developed for this study based on the Family Observation Schedule by Sanders et al. (1996) and used in several studies (Plant & Sanders, 2007; Rios et al., 2010; Williams et al., 2009). It presents operational definitions of the caregiver and child behaviors, with a coding table to register the behaviors observed in the observation sessions of the recorded caregiver-child interaction. We created specific behavior categories for this study, considering that the filming equipment of the observation sessions, due to technical problems, did not capture the audio. Thus, we defined the following categories of parent's behavior: positive look, play, approach, affection, negative look, negative physical contact, distance and no interaction; and as categories of child's behavior: play, affection, negative physical contact, interconnected activity and no interaction. Observation sessions were conducted three times with each parent-child pair in the EG (pre-test, post-test and follow-up) and twice with the CG (pre-tests 1 and 2).

- *Inventário de Estilos Parentais [Parenting Styles Inventory] (IEP)*: Created by Gomide (2006) and widely used in Brazilian studies, the IEP quantifies the child rearing practices reported by parents or caregivers. It consists of two positive (positive monitoring and moral behavior) and five negative practices (physical abuse, lax discipline, negative monitoring, neglect and inconsistent punishment). Their parenting styles are classified as: *Excellent*, when they report positive parenting practices and no negative parenting practices; *High Average*, when it is advisable to read parenting guidance books to improve parenting practices; *Below Average*, to whom participation in parent training groups is recommended; and *At-Risk*, when parents or caregivers are advised to participate in therapeutic intervention programs focused on the consequences of using negative practices over the positive ones.

- *Social Problem-Solving Inventory - Revised (SPSI-R):* Prepared by D'Zurilla et al. (2002) and translated and adapted to Brazil by Padovani et al. (2009). It is a self-report instrument that assesses the ability to solve problems in daily life. It measures two adaptive dimensions of problem solving (positive problem orientation and rational problem solving) and three non-functional dimensions (negative problem orientation, impulsive/careless style and avoidance style) in order to classify respondents' problem-solving ability compared to the average.

- *ACT Questionnaire:* Questionnaire included in the ACT Program Evaluation Guide (Silva, 2011) that measures the participants' initial repertoire (pre-test) and knowledge gained after program completion (post-test) through objective items. It consists of 56 items that are easy to understand and manage, which take an average of 30 minutes to complete. After collecting demographic data from the family, the instrument is divided into four subscales: *1. Parenting Style (PS)*, which assesses the type of discipline that parents use as consequences to children's behavior in different situations; *2. Electronic Media (EM)*, which checks how parents or caregivers control time children spend on medias and types of television programs, video games or websites they are exposed to; *3. Child Development (CD)*, which assesses the demands of parents to their children according to their age and stage of development; and *4. Parental Behavior (PB)*, which analyzes the attitudes of parents in different situations, as well as their participation and contribution to the prevention of violence. In all of them, participants must answer on a Likert scale and the higher the score, the greater the knowledge on the topics. Although the internal consistency of the instrument's subscales 1 and 4 have been recently attested (Altafim et al., 2018), when the instrument was applied and analyzed, such validation did not exist yet. The instrument was administered in the Pre-Program Meeting as a pre-test, in the last session as a post-test and in the follow-up of the EG.

Materials and Equipment

The equipment used was computer and filming cameras available in the lab-house where the observation sessions took place. The materials used included answer sheets for the described instruments, notebook and pen for notes. For the group intervention, we used material from the *ACT Raising Safe Kids Program*, translated into Portuguese (Silva, 2011), which contains Manual for Parents, Activity Guide for Children, Facilitator's Manual, Motivational Interview Manual and Evaluation Guide, as well as cardboard, markers, balloons, toothpicks and modeling clay for the dynamic activities of the sessions.

Procedure

The present study was submitted and approved by the Ethics Committee for Research with Human Beings of the Federal University of São Carlos (Process no. 358.230). Participants were then recruited by ACT Program posters spread throughout the University, social media publication, e-mails to University Departments and Graduate courses, as well as radio interviews. The recruitment period lasted about two months.

Twenty-two parents signed the ICF, divided into two groups of 11. Participants were randomly assigned to the EG and CG groups. They filled out a form informing the days and shifts available during business hours, being divided among those who had availability: in the morning shift (n=9); in the afternoon shift (n=13); and in both shifts (n=14). A draw was carried out only among participants whose availability was in both shifts, being randomly divided into seven in each: EG in the morning shift and CG in the afternoon shift. The other participants (n=8) were allocated according to their availability, in order to complete the groups.

This study used pre-test, post-test and follow-up measures (three months after the intervention) and experimental (EG) and control (CG) groups randomized in most of the sample. For ethical reasons, at the end of the EG follow-up, the intervention was also available to the CG. All stages of the study took place within the academic community (University).

Data collection.

The application of the pre-test instruments occurred in rooms of the University's hospital. They were applied individually for the CG and in-group to the EG, due to difficulties with the deadline for starting the intervention. In the group application, the researcher provided a general explanation of each instrument to everyone and clarified the doubts of each one as they arose. At the other assessment moments, we applied the instruments individually to both groups, before starting the observation session.

The observation sessions took place in a lab-house in the University hospital, equipped with a unidirectional mirror and digital film cameras in all five rooms (living room, bedroom, bathroom, kitchen and backyard), furnished in a functional manner as a real home, in order to favor the identification and teaching of adequate parenting practices, as close as possible to the natural environment. In the attached observation room, a computer stored the videos of the observation sessions for later analysis.

On a date and time scheduled with each participant, parent and child (target of the study) attended the lab-house and followed instructions to perform tasks, in a session of approximately 30 minutes, 10 minutes in each room. The proposed activities involved: playing with the child in the living room; reading books with the child in the bedroom; preparing and having a snack with the child in the kitchen. The experimenter explained to the caregivers that she would be in the attached observation room and would knock on the mirror to inform them that their time in the room was over and they should move on to the next one.

The APA signed a memorandum authorizing the implementation and evaluation of the ACT by the Brazilian university, and the Brazilian Director of the Violence Prevention Office at APA translated the program materials. The ACT Program was implemented by a pair of researchers trained by the APA, one of them being the first author. A Pre-Program Meeting and eight ACT sessions were conducted, each lasting two hours, namely: 1. Understand your children's behaviors; 2. Young children's exposure to violence; 3. Understanding and controlling parent's anger; 4. Understanding and helping angry children; 5. Children and electronic media; 6. Discipline and parenting styles; 7. Discipline for Positive Behaviors; 8. Taking the ACT Program with you. The only adaptation made to the program was the insertion of videos as examples of media violence.

We used techniques to foster participants' retention to the intervention, such as: parallel activity for children during the sessions, drawing of gifts (children's books, magazines, chocolates, etc.) at each session, opportunity to decide and contribute to the snack time every week, the creation of a social media group designed to remember tasks and maintain an open conversation channel with the participants at all times, phone calls in case any participant was absent, and finally, certificates of program completion at the end of the intervention. Transport tickets were also available to participants, however, most had their own vehicles, thus dispensing with the incentive.

Data analysis.

The evaluation instruments were first analyzed according to specific instructions proposed in their corresponding manuals. The observation sessions were decoded by neutral researchers after reaching a satisfactory *kappa* agreement coefficient (k=0.79 for parental behavior and k=0.52 for children's behavior) between codings (Landis & Kock, 1977). The video recordings were randomly assigned to researchers, regardless of participants or session time, so that this would not influence their analysis. These researchers analyzed each filmed scene and completed the protocol, computing 1 when the behavior occurred and 0 when it did not. A "scene" consisted of each set of videos lasting approximately 6 seconds, referring to the same set of participants' movements captured by different cameras. The frequency of each behavior per session was calculated from the sum of the numbers assigned by the observer researchers. After the sessions were coded, the parents' behaviors were classified as: (a) *positive* (positive look, playing, approaching and affection), (b) *negative* (negative look, negative physical

contact and distance) and (c) *non-interaction*. The child's behaviors, in turn, were divided into: (a) *positive* (playing, affection and interconnected activity), (b) *negative* (negative physical contact), and (c) *non-interaction*. The frequencies of behaviors in each category were then added to obtain an average of positive, negative and non-interaction behaviors of parents and children for each group and phase.

In order to assess the effectiveness of the ACT Program, statistical analyses were used to verify possible differences between the performance of the EG participants after the intervention and the CG's performance during the waiting period, followed by the analysis of the EG in time. Considering the small number of participants in each group, we used two non-parametric approaches, since the criterion of normal distribution of the dependent variable was not met. One of the approaches is given by the Mann Whitney test (Wilcoxon, 1945; Mann & Whitney, 1947), which assesses differences between independent groups (EG and CG), and the second is the Wald-type statistic, performed by the non-parametric analysis of longitudinal data (Brunner & Langer, 2000) with repeated measures, which aims to compare the groups or individuals evaluated in different periods of time (pre-test, post-test and follow-up of the EG). In order to verify the direction of the difference between the groups and the time difference in each group, we used multiple comparison tests, with the Bonferroni correction, which divides the level of significance by the number of tests performed in each multiple comparison. A significance level of 5% was adopted for the tests and the R software and an Excel macro (Rosa, 2001) were used to perform the analyses.

RESULTS

First of all, we compared the sociodemographic characteristics and the initial repertoire of participants from both groups to check whether there were differences between the groups in the pre-test. Through the non-parametric Mann-Whitney test, we attested that, at the beginning of the study, the groups were equivalent in terms of age of participants and socioeconomic level, but unequal in age of children, with children of CG participants being older than those of the EG ($U = 4.0$; $p = 0.045$). Regarding the initial self-report and observational measures, CG and EG did not show statistically significant differences.

Intergroup Analysis

In order to investigate the possible effect of the intervention on the repertoire of EG participants, we performed a non-parametric ANOVA between the groups (Table 1). In order to facilitate the comparison between groups, pre-test 2 of the CG was also called post-test, although it did not undergo intervention. It is important to remember that the ACT Questionnaire was not applied to the CG at this stage and will not be considered for this analysis. Regarding the observational data, as the children did not show negative behaviors at any of the evaluated moments, such data were also not included in the analysis below.

As you can see in Table 1, no statistically significant difference was found between group, time or group and time interaction for parenting style - IEP, indicating an insufficient level of change in the perception of parenting styles of the EG participants, compared to the wait-list CG. Additionally, we did not find significant differences between time, group or group and time interaction for any of the observed behaviors of parents or children. However, a significant difference was observed in the measure related to social problem-solving (SPSI-R) for the time effect and group and time interaction. In order to identify where the difference occurred, we performed multiple comparison tests. We evaluated the differences between the measures of each group in time, as well as the differences between the groups (Table 2). No statistically significant difference was found in problem-solving skills between the groups in time, but there was a significant difference in the SPSI-R between pre- and post-test measures of the EG, with a higher mean in the post-test. These results indicate an increase in the post-test problem-solving skills for the EG, while the same did not occur with the wait-list GC.

Intragroup Analysis (GE)

In order to investigate whether the intervention resulted in a change in the EG scores at post-test and whether such changes were maintained at follow-up, a non-parametric ANOVA was performed for all reported and observed measures, including the results of the ACT Questionnaire (Table 3). As you can see, there was a statistically significant difference between pre-test, post-test and follow-up in the IEP and in the ACT Questionnaire. Among the ACT Questionnaire subscales, they were all statistically significant, except for Electronic Media. Results showed no statistically significant differences for the SPSI-R, positive, negative and non-interaction behaviors of parents, and positive and non-interaction behaviors of children. For the negative behaviors of children, no tests were performed since the frequency of behaviors in the pre- and post-test was equal to zero. In order to identify the direction of these differences, we ran a multiple comparisons test for the instruments where there was significance. A statistically significant difference was found in the IEP (Wald = 20.21;

Table 1. *Nonparametric ANOVA for difference between pre-test and post-test among groups in self-report and observational measures*

	M (SD)				Comparison	*Wald*	*gl*	*P*
	Pre-Test		Post-Test					
	EG	CG	EG	CG				
Parent's Self-report								
					Group	1.73	1	0.188
IEP	-0.20 (12.99)	10.20 (6.91)	9.20 (6.57)	11.80 (4.76)	Time	1.97	1	0.161
					Interaction GxT	1.37	1	0.243
					Group	1.17	1	0.279
SPSI-R	12.00 (1.66)	10.16 (4.09)	13.96 (1.40)	10.80 (6.16)	Time	14.08	1	0.000**
					Interaction GxT	4.45	1	0.035*
Parent's Behavior								
					Group	2.17	1	0.141
Positive	40.40 (9.66)	36.8 (10.03)	41.20 (5.93)	37.2 (4.38)	Time	0.01	1	0.920
					Interaction GxT	0.01	1	0.920
					Group	0.02	1	0.899
Negative	1.40 (1.67)	0.60 (0.89)	0.40 (0.55)	1.20 (1.30)	Time	0.03	1	0.854
					Interaction GxT	1.39	1	0.238
					Group	0.26	1	0.611
Non-Interaction	0.20 (0.45)	0.00 (0.00)	0.60 (1.34)	1.00 (1.00)	Time	2.62	1	0.106
					Interaction GxT	1.63	1	0.202
Child's Behavior								
					Group	0.01	1	0.962
Positive	32.8 (2.68)	34.40 (4.88)	32.6 (6.47)	32.80 (4.60)	Time	0.06	1	0.803
					Interaction GxT	0.39	1	0.533
					Group	0.95	1	0.331
Non-interaction	0.20 (0.45)	0.40 (0.55)	3.40 (6.54)	1.20 (0.84)	Time	3.15	1	0.076
					Interaction GxT	0.06	1	0.800

Note. GxT = Group x Time.
*$p < 0.05$; **$p < 0.001$.

Table 2. *Multiple comparisons test among groups and over time for the SPSI-R*

	Comparison	M (SD)	Wald	gl	P
Time	Pre x Post EG	12.00 (1.66) x 13.96 (1.40)	10.989	1	0.001**
	Pre x Post CG	10.16 (4.09) x 10.80 (6.16)	3.087	1	0.079
Groups	Pre GE x Pre CG	12.00 (1.66) x 10.16 (4.09)	0.363	1	0.547
	Post GE x Post CG	13.96 (1.40) x 10.80 (6.16)	2.077	1	0.150

Note. **$p < 0.001$. Remains significant after Bonferroni correction.

$p < 0.001$) and in the Parenting Style subscale of the ACT Questionnaire (Wald = 7.44; $p < 0.01$) between the pre-test and the follow-up, with significant improvement in participants' perception of parenting style and increased knowledge on parenting styles at follow-up. For knowledge in parenting styles, there was also a significant increase from pre to post-test (Wald = 14.20; $p < 0.001$). Besides, for the Child Development and Parental Behavior subscales there was a significant increase in knowledge from pre to post-test [(Wald = 24.80; $p < 0.001$); (Wald = 20.36; $p < 0.001$), respectively].

Comparison of Intergroups and Intragroup (GE) Analyses

Crossing the analysis between groups with the intragroup analysis of the EG, when comparing the IEP scores between the pre- and post-test measures of both groups, no significant differences were found. However, when evaluating the parenting styles of the EG participants over time, a significant improvement was found between pre-test and follow-up, considering the isolated measures

Table 3. *Results of comparative non-parametric ANOVA between pre-test, post-test and follow-up of the EG for self-report and observational measures*

Measures	M (SD)			Wald	gl	P
	Pre	Post	FU			
IEP	-0.20 (12.99)	9.20 (6.57)	9.20 (7.53)	20.29	2	0.000**
SPSI-R	12.00 (1.66)	13.96 (1.40)	12.84 (3.39)	5.44	2	0.066
ACT Questionnaire						
Parenting Style	30.40 (6.23)	41.20 (4.97)	41.20 (2.17)	18.882	2	0.000**
Electronic Media	26.20 (6.94)	31.60 (2.51)	30.60 (3.85)	5.543	2	0.063
Child Development	67.00 (4.06)	72.80 (2.28)	68.20 (9.52)	58.427	2	0.000**
Parental Behavior	33.00 (8.86)	43.40 (2.41)	39.80 (8.07)	22.481	2	0.000**
Observational measures						
Parent's Positive Behavior	40.40 (9.66)	41.20 (5.93)	37.8 (14.45)	2.59	2	0.273
Parent's Negative Behavior	1.40 (1.67)	0.40 (0.55)	2.00 (2.83)	1.38	2	0.501
Parent's NI Behavior	0.20 (0.45)	0.60 (1.34)	0.40 (0.55)	2.66	2	0.264
Child's Positive Behavior	32.8 (2.68)	32.6 (6.47)	32.8 (3.19)	0.177	2	0.915
Child's NI Behavior	0.20 (0.45)	3.40 (6.54)	1.20 (2.17)	2.37	2	0.305

Note. FU = Follow-up; NI = Non-Interaction.
**$p < 0.001$.

of the EG. This may be explained by the high initial scores of the CG in the IEP, which made the difference between times in the EG seem smaller and, therefore, not significant when compared to the CG.

It is also worth noting that although no significant differences were found between the isolated measures of problem-solving skills in the EG, when comparing them to the CG scores on the SPSI-R, the increase in problem-solving skills was significant. This was probably due to the maintenance of scores at the same levels in all measures of the CG, highlighting the changes in the EG scores when comparing the groups. Finally, concerning the observational measures, there was agreement between the analyses: no significant differences were found for positive, negative and non-interaction behaviors of parents or children.

DISCUSSION

In view of the objective of conducting a pilot evaluation study of the ACT Program in Brazil through observational measures of caregiver-child interaction and caregiver self-report, the program showed to be effective in significantly increasing self-reported problem-solving skills of EG parents compared to the CG, as well as in changing participants' perception of parenting styles, although the difference was not statistically significant between the groups. Neither were significant differences found in the observed frequency of positive, negative and non-interaction behaviors between parents and children. However, there was a significant increase in knowledge on the program content (parenting styles, child development and parental behavior) in the EG after the intervention, except for the subscale on electronic media. It is interesting to note that in the study by Guttman et al. (2006), participants pointed to the media violence module as the most useful in the ACT program while this study found no significant increase in knowledge in this area. Perhaps this is due to the increased dissemination of digital knowledge and control we have today.

The positive results of the intervention in terms of increasing the participants' problem-solving skills are encouraging, since deficits in problem-solving skills are associated in literature with the risk of aggressive behavior and infractions. For example, Padovani and Williams (2005) reported a decrease in anger and depression scores in youth in conflict with the law after a problem-solving skills teaching intervention. Although the sample in this study was not clinical because it was a universal prevention intervention, likewise the population at risk in the study by Padovani and Williams (2005), the intervention contributed to the participants' acquisition of problem-solving skills. As the ACT Program is a violence prevention program, the increase in this skill indicates greater anger management, consequently, less risk of using physical or humiliating punishment in the discipline of children, thus suggesting the effectiveness of the program.

Although the SPSI-R problem-solving data have positive results in the EG post-test, the results indicate a return to levels close to the pre-test in the follow-up, showing that the effects were not maintained at the same levels in the long-term, but were still better than before the intervention. Despite the significant increase found, all scores obtained in both groups were within the mean, which is justified if we

consider once again that the study assesses the effects of a universal prevention intervention, therefore, the sample will not necessarily have clinical levels. It must be taken into account, however, that the validation studies of the SPSI-R are not complete in Brazil (Padovani et al., 2009) yet, as it still does not have its own standardization, and its parameters are now compared with the American standards.

Likewise, we detected possible late effects in terms of Parenting Styles (IEP) and knowledge on the topic assessed by the ACT Questionnaire: there was a significant increase in scores from the pre-test to the follow-up measures. These data corroborate data from other studies (Miguel & Howe, 2006; Porter & Howe, 2008; Thomas et al., 2009), whose results also showed an increase in the follow-up scores. The authors raise the possibility that the good results in the follow-up indicate that some effects of the program take a little longer to be absorbed by the participants (Porter & Howe, 2008) and that the follow-up participants have more time to reflect on the material and apply it in their work and personal life (Miguel & Howe, 2006). Although such statements are speculative in nature, an argument in their favor is the fact that the significant increase obtained between pre-test and follow-up measures was in parenting styles, both in terms of knowledge (ACT Questionnaire) and reported behavior changes (IEP), a subject that involves changes in habits and cognitions and thus possibly takes longer to be assimilated and learned. Conversely, the Child Development and Parental Behavior subscales had an increase in scores between pre- and post-tests, perhaps showing that less complex knowledge and more practical behavior changes are immediately noticeable. Future studies could confirm these claims.

Comparing the observational measure of non-interaction between parent-child, the means showed a positive acceleration for both groups, i.e., the interaction in the post-test of both groups decreased, although not significantly. It might have happened due to the reduction of the novelty effect that the lab-house represented in the pre-test. When children go to a new environment for the first time, they tend to make the most of it, involving their parents, thus remaining in constant interaction. Once the novelty is gone, children's agitation may decrease and, thus, non-interaction increases, i.e., the interaction of the dyads decrease.

As limitations of the study, the restricted sample size is the first and more important one, since it undermines the analysis and generalization of the results. In terms of methodological difficulties, the non-strict randomization of the study is another limitation caused by availability issues of the participants' schedules. Besides, there was no comparison data (CG) from the ACT Questionnaire, thus we cannot say the increase in knowledge in the program modules was an effect resulting from the intervention. Another methodological limitation of the study refers to the heterogeneous administration of the instruments in the pre-test measure of the groups: conducted individually for the CG and in-group for the EG.

Finally yet importantly, the absence of audio in the video recordings of the observational sessions caused the loss of important qualitative data of the participants and their children´s verbal behavior, since speech is one of the main quality indicators of that interaction. Possibly, the observation sessions without audio were not sensitive to changes resulting from the intervention, despite the researchers' efforts to create behavior categories that were adequate to the limited conditions of the filming equipment and analysis to ensure inter-observer reliability. The number and duration of observation sessions is also a variable to take into account: perhaps they were not enough or changes in behavior need longer observation sessions to be detected. The fact that there was only one negative behavior in the child's behavior protocol might have contributed for this category to be null in the analyses.

Another plausible hypothesis regarding the observational results, identified by the participants themselves after some observation sessions, is that everything was new in the lab-house: children had different toys and books, in addition to snacks, which is why they would have no reason to present negative or inappropriate behaviors. Thus, the duration of sessions may be increased to become more naturalistic. A suggestion for future studies could be asking parents to bring a limited number of toys to minimize distractions. Another suggestion would be carrying out observation sessions of the parent-child interaction in a natural situation (home), in order to reduce the laboratory bias that influences the behavior of the participants (Batista, 1996). Increasing the number of sessions and adding longer follow-ups (six months, one year, two years) would also be good suggestions for future studies.

Retention and adherence problems are common issues in intervention programs (Assemany & McIntosh, 2002). However, some retention strategies and practices can minimize this obstacle. The present study included the provision of freebies and snacks, as also suggested by Burkhart et al. (2013), Knox et al. (2010) and Knox et al. (2011), who used raffles of gifts such as food items and books to encourage the participation of participants in the intervention group. Porter and Howe (2008) provided participants with a free dinner before the session, as well as child care during sessions, a procedure also performed by this study, whenever possible.

Recruitment period is also a variable that favors the retention of participants. In the present study, the time to recruit participants was from two to three months, while other studies reported much longer periods of recruitment: the recruitment of participants in the study by Knox et al. (2013) lasted about a year and studies by Burkhart et al. (2013) and Knox et al. (2011) lasted 2 years.

Another factor that possibly contributes to greater retention of participants abroad is the possibility of remunerating them, which does not occur in Brazil, according to a determination by the Brazilian Ethics Committee for Research with Human Beings, as also mentioned by Altafim et al. (2016). In several evaluation studies of the ACT Program (Burkhart et al., 2013; Knox et al., 2013; Knox et al., 2011; Knox et al., 2010; Thomas et al., 2009), the authors describe money compensation as reward for completing each stage of the study.

Porter and Howe (2008) attribute the low dropout rate of their participants to the following factors, encouraging their use by future ACT implementers: multiagency collaboration; community involvement; weekly calls; and a supportive, caring and fun environment. They also indicated that free dinner and child care and the intervention venue located close to a bus route also contributed to enhance retention. Porter and Howe (2008) additionally suggest grant funds and incentive donations to encourage family retention during the program. Such suggestions are consistent with the reality of this study. We believe that variables such as weekly calls, a welcoming, supportive and fun environment and child care during sessions favored the high attendance rate in the study. However, the collaboration of multiple agents, community involvement and funding from local companies would likely have increased adherence to the program.

Despite the inconclusive observational results, this study proves to be a pioneer as the first to incorporate observational measures in ACT evaluation studies. Thus, we encourage future studies to use the listed retention strategies, to expand the research sample and to improve the methodological difficulties faced, especially the ones concerning the observation measures of parent-child interaction, in order to increase the scientific evidences of the ACT Program.

Finally, as it fits into the scope of the Brazilian Law n. 13.257 (2016) for the development of public policies on early childhood and in line with the Law n. 13.010 (2014) that highlights children's right to grow up free from any type of violence, this study and likewise interventions within child abuse prevention should be considered for the elaboration of public policies to protect children and youth rights in Brazil.

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