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SPECIAL SECTION: RELATIONAL FRAME THEORY AND APPLICATIONS

Neuro-Typical Children Outcomes from an Acceptance and Commitment Therapy Summer Camp

Mary Rachel Enoch[1] · Mark R. Dixon[2]

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Abstract

The current article discusses the practical implications of using acceptance and commitment therapy (ACT) in a community camp setting with children. Previous research demonstrates that ACT curricula for children paired with formal mindfulness- and acceptance-based activities show promise as an intervention for children. ACT may also be an effective intervention with children due to its approachable, acceptable, and easily implemented format of delivery. The current study used a neurotypical sample, and outcomes support the potential for increasing psychological flexibility and mindful awareness between an experimental group and a control group. Scores on the Avoidance and Fusion Questionnaire for Youth (AFQ-Y) and the Child Acceptance and Mindfulness Measure (CAMM) self-report questionnaires were obtained during pre- and postintervention. The results of the AFQ-Y suggest that there was a significant difference between the experimental group (M = 17.13, SD = 2.64) and the control group (M = 27.4, SD = 2.64) at posttest, $F(1, 28) = 7.53$, $p = .01$, $\eta_p^2 = .212$. Similarly, the results of the CAMM suggest that there was a significant difference between the experimental group (M = 29.66, SD = 1.99) and the control group (M = 21.26, SD = 1.99) at posttest, $F(1, 28) = 8.89$, $p = .006$, $\eta_p^2 = .241$. These results indicate that the members of the experimental group, compared to the control group, had significant increases in their overall mindful awareness and psychological flexibility after completing the Mindfulness Camp.

Keywords Acceptance and commitment therapy · Mindfulness · Community setting · Children

Acceptance and commitment therapy (ACT) considers the fundamental basis of psychopathology and human suffering to be caused by cognition and language. The human capacity for language often leads to a decrease in individuals' ability to engage in behavior that leads them toward living a valued life (Swain, Hancock, Dixon, Koo, & Bowman, 2013). Understanding the role language and cognition have on human suffering is significant, as individuals' quality of life is often diminished by their capacity to live values-focused lives. ACT is part of a larger framework of behavioral and cognitive therapies (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013), based on the pragmatic philosophy of functional contextualism (Biglan & Hayes, 1996), and emphasizes workability as its truth criterion. The contextualistic perspective of ACT does not see thoughts and feelings as causing other actions, except when regulated by the context. Therefore, ACT goes beyond attempting to change thoughts and feelings and instead seeks to change the contextual events that regulate and organize cognition by understanding how the psychological domains are linked (Coyne, McHugh, & Martinez, 2011; Hayes et al., 2013).

Increasing psychological flexibility is a key aim in ACT and is the process of contacting the present moment fully as a conscious human being and persisting or changing behavior in

Research Highlights
- ACT is an effective intervention with youth populations.
- An ACT curriculum for children demonstrated increases in psychological flexibility in a neurotypical sample.
- Compared to a control group, youths participating in a Mindfulness Camp demonstrated increases in mindful awareness.
- Preliminary results suggest that delivering ACT in a community group format may be a feasible and approachable delivery model.

✉ Mary Rachel Enoch
renoch@antioch.edu

Mark R. Dixon
mdixon@siu.edu

[1] Applied Psychology Department, Antioch University New England, 40 Avon Street, Keene, NH 03431, USA

[2] Rehabilitation Institute, Southern Illinois University, 1025 Lincoln Drive, Carbondale, IL 62901, USA

the service of chosen values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Swain et al., 2013). ACT seeks to modify the function of internal experiences rather than attempting to diminish or change the form (topography) or frequency of those experiences. Six core processes underlie ACT psychological flexibility: acceptance, cognitive defusion, self-as-context, values, committed action, and present-moment awareness.

Acceptance is taught as an alternative to experiential avoidance and involves the active embrace of one's private events that are occasioned by past events without trying to change their form or frequency (Hayes et al., 2006). Cognitive defusion refers to the process of encouraging individuals to "let go of the need to control or eliminate distressing thoughts or experiences by changing the way they interact with the thoughts" (Dixon & Paliliunas, 2018, p. 33). Individuals can change the behavioral function of their thoughts by being willing to experience unwanted thoughts rather than attempting to change their form or frequency. Self-as-context refers to an individual's ability to engage in perspective taking. Perspective taking is used to teach a distinction between attaching to the content of one's distressing thoughts and experiences and noticing the stable, concrete facts about one's experience. Values are chosen qualities of purposive action and are understood as the "overarching sources of reinforcement in the individual's life" (Dixon & Paliliunas, 2018, p. 35). Committed action refers to the behaviors individuals engage in that keeps them focused on their values (preferred reinforcers) and the ability to pivot their behavior toward contacting more preferred outcomes (Dixon & Paliliunas, 2018).

The overarching model of ACT is founded on empirically validated research that is concerned with key interventions and change processes (Hayes et al., 2013). Literature on ACT supports the effectiveness of acceptance-based and mindfulness-based cognitive behavioral therapies that seek to promote greater psychological flexibility (Hayes et al., 2006; Hofmann, Sawyer, Witt, & Oh, 2010). ACT as a treatment seeks to undermine the grip of the literal content of cognition that occasions avoidance behavior. Mindfulness is a construct often used when promoting present-moment awareness and has been positively associated with psychological well-being (Howell, Digdon, & Buro, 2010). The ACT processes—defusion, acceptance, present-moment awareness, and self-as-context—are each targeted components in mindfulness and demonstrate the interrelatedness of mindfulness and ACT (Fletcher & Hayes, 2005). The ACT model of behavior change and mindfulness work together to increase psychological flexibility and increase the information a person is able to access to promote mindful awareness (Fletcher & Hayes, 2005).

Mindfulness exercises serve as techniques to achieve cognitive defusion and increase behavioral and psychological flexibility, the overarching goal of ACT. Mediators of change for ACT are suggested to reduce experiential avoidance and increase acceptance and defusion. Furthermore, ACT has demonstrated reliable enhancements in learning and performance by stating explicit goals and seeking to understand the meaning and function of events based on an individual's current context (Greco & Hayes, 2008).

More recently, a growing body of research has emerged supporting the use of ACT as an effective intervention with various child and adolescent populations. Hayes, Boyd, and Sewell (2011) conducted a randomized controlled pilot study with 38 clinically referred adolescents with a mean age of 14.9 years. The study examined the effectiveness of ACT as a treatment for adolescents who were exhibiting signs of depression. Results of the study suggested participants in the ACT group demonstrated a decrease in depressive symptoms. ACT has been demonstrated to be an effective treatment with a variety of other youth populations. For example, Ciarrochi, Kashdan, Leeson, Heaven, and Jordan (2010) conducted a 1-year longitudinal study with adolescents. The study measured mindfulness, emotional awareness, and experiential acceptance to assess emotional well-being. The outcomes suggested that emotional awareness and experiential acceptance each predicted an increase in well-being. Hancock et al. (2016) evaluated the effectiveness of a 10-week group-based ACT or cognitive behavioral therapy program. Participants ranged from 7 to 17 years old and met the criteria for anxiety disorders as outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Outcomes supported ACT being used as an effective empirically supported treatment option for youths with anxiety. A study conducted by Kennedy, Whiting, and Dixon (2014) examined the effects of an ACT intervention with preschool children to determine if ACT affected their willingness to approach and try new foods. The results suggested that after emphasizing values and committed action during the treatment phase, novel food consumption increased. Relatedly a study conducted by Enoch and Dixon (2017) demonstrated that ACT was an effective treatment to increase attention in neurotypical youths aged 6 to 12 years. After the treatment group completed six sessions of present-moment awareness activities, increased durations in sustained attention occurred compared to the age-matched control group. Similar positive findings have been reported in populations with anorexia nervosa (Heffner, Sperry, Eifert, & Detweiler, 2002), chronic pain (Wicksell, Dahl, Magnusson, & Olsson, 2005), and anxiety (Codd, Twohig, Crosby, & Enno, 2011), as well as for reducing high-risk sexual behavior (Metzler, Biglan, Noell, Ary, & Ochs, 2000).

Research conducted with youth populations has demonstrated ACT is a feasible and acceptable treatment for youths. Coyne et al. (2011) suggested that ACT may be an alternative treatment that is not as strict compared to other behavioral and cognitive treatment models. Despite emerging research supporting the use of ACT with youth populations, further research is necessary to elucidate the effectiveness of ACT with children with and without clinical diagnoses. The

present study sought to determine if implementing ACT with children in a group camp setting increased their mindful awareness and psychological flexibility.

Method

Participants and Setting

Thirty elementary-aged children (7–12 years old) participated in the current study, with 15 children in the experimental group and 15 children in the control group. For the experimental group, 17 children attended the camp; however, two of the participants' data were not included in the analysis due to each noting they had previously attended a Mindfulness Camp. Therefore, a total of 15 participants' data were included in the analysis: 8 girls and 7 boys with a mean age of 9.6 years. Each of the 15 participants had 100% attendance at camp. The participants included in the data analysis indicated they had no prior mindfulness or meditation training prior to camp participation.

The camp the participants partook in was advertised (print and electronic) as a community summer camp open to children in the local community. The camp was advertised as a Mindfulness Camp, and participants signed up through the local university's website. Caregivers and children were told the camp was part of a research project upon enrollment. When children were registered for the camp, all caregivers were asked to fill out a brief demographic form, which included questions regarding age, grade, gender, medical diagnoses, medications, other medical concerns, behavioral concerns, and general comments. No caregivers indicated on the demographic form that their children had any formal diagnoses, were on medications, or had any behavioral concerns. All children enrolled in the camp were neurotypical. Caregivers of the participants provided informed consent prior to the start of camp, and all participants provided informed assent on the first day of camp.

Participants in the Mindfulness Camp attended for a period of 1 week (5 days), 6 h per day, for a total of 30 h. Participants engaged in formal mindfulness- and acceptance-based activities from the curriculum *ACT for Children With Autism and Emotional Challenges* (Dixon, 2014). One Board Certified Behavior Analyst and two graduate-level assistants conducted the camp. Each camp leader had formal training in ACT and had experience conducting a Mindfulness Camp.

Additionally, a control group was used in the current experiment. The children in the control group did not sign up to attend camp and were recruited from local community summer camps. The control participants were semirandomly recruited, with inclusion criteria solely based on age. Caregivers signed the participants up to be part of the control group. All caregivers were asked to fill out the same brief demographic form that was completed for participants in the experimental group. No caregivers indicated on the demographic form that their children had any formal diagnoses, were on medications, or had any behavioral concerns. After participants in the control group signed up, they were age matched to Mindfulness Camp participants. After an age group was matched, no more participants for the control group were recruited for that age group. Altogether, there were 15 participants in the control group, 8 girls and 7 boys, with a mean age of 9.6 years. The control participants had no previous mindfulness or meditation exposure.

Design

A 2 (experimental, control) × 2 (pretest, posttest) mixed-factorial experimental design was used in this study. All participants in the experimental group attended the Mindfulness Camp, whereas the control group did not receive any mindfulness intervention.

ACT (Treatment) Group

On the first day of Mindfulness Camp, prior to engagement in any activities, participants in the experimental group completed two self-report measures: the Avoidance and Fusion Questionnaire for Youth (AFQ-Y; Greco, Lambert, & Baer, 2008) and the Child Acceptance and Mindfulness Measure (CAMM; Greco, Dew, & Baer, 2005). On the last day of camp, after completion of all activities, the participants completed the AFQ-Y and CAMM questionnaires for a second time. On both occasions, the experimenter read each question to the participants and instructed them to circle the number that most accurately reflected their thoughts/feelings for that question. The presentation of the questionnaires was counterbalanced across the two time periods. Increases in mindful awareness and psychological flexibility were measured based on the results of the two questionnaires collected during camp.

Each day of camp, participants engaged in activities that targeted the different processes in the ACT model. The activities were part of the *ACT for Children With Autism and Emotional Challenges* (Dixon, 2014) curriculum, which presented each activity with varying levels of complexity based on grade level to control for depth of understanding and the presentation of age-appropriate questions. During camp, the participants also engaged in supplemental mindfulness activities that were appropriate for children 7 to 12 years old. Mindfulness activities such as mindful listening, mindful yoga, mindful walks, and daily experience logs were used. All participants engaged in the same activities during the week, regardless of age. However, for the ACT activities, the children were divided into two groups based on grade level as outlined in the curriculum. The outline of the daily camp

activities is located in the Appendix. At the end of camp, caregivers completed a social validity survey to determine their opinions and acceptance of the camp. Participants also completed a social validity survey (adjusted for children) to determine their opinions of the camp.

Mindful Listening Mindful listening occurred at the beginning of each day for 30 min. During the mindfulness listening activities, participants sat on their yoga mats and faced the front of the room. The participants rested their voices, laid down on their mats, and either closed their eyes or shifted their gaze downward.

ACT Activities During the ACT activities, participants sat on their mats and faced the front of the room. The leader read the front page of the activity to the group and asked simple questions regarding the content (as outlined in the activity). Participants then divided into two groups and completed the second part of the activity.

Control Group

Participants in the control group completed the AFQ-Y (Greco et al., 2008) and CAMM (Greco et al., 2005), the same questionnaires the experimental group received. Each assessment was completed on Day 1 and completed again 5 days later. The experimenter read each question to participants and instructed them to circle the number that most accurately reflected their thoughts/feelings for that question. The delivery of the two questionnaires was counterbalanced across the first and last session. Upon completion of the assessments, participants were thanked for their time and no intervention was implemented.

Dependent Measures

AFQ-Y One of the two self-report measures the participants completed was the AFQ-Y (Greco et al., 2008). This measure is a 17-item questionnaire developed to assess psychological inflexibility in youth populations (Schmaltz & Murrell, 2010). Research on the AFQ-Y demonstrated strong psychometric consistency in youth populations; items on the questionnaire had adequate internal consistency reliability (α = .90; Greco et al., 2008; Livheim et al., 2016; Schmaltz & Murrell, 2010). The questionnaire identified psychological inflexibility as behavioral ineffectiveness when difficult emotions, experiential avoidance, and cognitive fusion were encountered (Coyne et al., 2011). The minimum score was 0 and the maximum was 68, with decreased scores related to an increase in overall psychological flexibility. The AFQ-Y presented questions on a Likert scale that ranged from 0 to 4. A score of 0 indicated *not at all true* and a score of 4 indicated *very true*. Example items included "My life won't be good until I feel happy" and "I must get rid of my worries and fears so I can have a good life."

CAMM The second of the two self-report measures participants completed was the CAMM (Greco et al., 2005). This measure is a 10-item questionnaire developed to measure an individual's overall mindful awareness and present-moment focus. The CAMM is a developmentally appropriate measure for youth populations that demonstrates strong psychometric consistency (α = .81; Greco, Baer, & Smith, 2011; Greco et al., 2005). Increased scores on the CAMM corresponded to higher levels of mindful awareness, with a minimum score of 0 and a maximum score of 40. The CAMM presented questions on a Likert scale that ranged from 0 to 4. A score of 0 indicated *never true* and a score of 4 indicated *always true*. Example items included "I get upset with myself for having feelings that don't make sense" and "I think that some of my feelings are bad and that I shouldn't have them."

Social Validity: Children The experimental group completed a five-question social validity questionnaire on the last day of camp. The questionnaire used a Likert scale that ranged from 1 (*not at all*/*nothing at all*) to 4 (*a lot*/*all the time*). The questions asked about camp enjoyment, whether mindfulness techniques were learned in camp, what they learned about feelings, about present moment/attention, and whether participants would use the ideas and skills in the future.

Social Validity: Caregivers On Day 5 of the camp (the last day), caregivers completed a seven-question social validity questionnaire. The questionnaire used a Likert scale that ranged from 1 (*not at all*/*nothing at all*) to 4 (*a lot*/*all the time*) and asked caregivers questions about their child. The questions were as follows: (a) "How useful did you find the Mindfulness Camp for enhancing your child's attention and focus?" (b) "How much do you think your child learned about understanding mindfulness (in general)?" (c) "How much do you think your child learned about applying mindfulness during the day?" (d) "Does your child talk about mindfulness or things learned at camp outside of camp?" (e) "How much do you think your child enjoyed the Mindfulness Camp?" and (f) "How often does your child use the ideas learned in the Mindfulness Camp?"

Results

To analyze the results of the study, SPSS (Version 24.0) was used to conduct the statistical analyses. To evaluate the accuracy of performance, a paired samples *t*-test was conducted to compare the within-group outcomes for the experimental and control groups on the AFQ-Y and CAMM self-report measures between the two time periods (pretest, posttest). A

repeated measures multivariate analysis of variance (MANOVA) was conducted to test intervention effects between groups across the two time periods.

AFQ-Y

A significant difference was shown between pretest ($M = 22.4$, $SD = 8.13$) and posttest ($M = 17.13$, $SD = 7.64$) time periods, $t(15) = 2.64$, $p = .019$. The results indicated that the experimental group demonstrated increased psychological flexibility after the implementation of the intervention.

The results of the MANOVA demonstrated there was no difference between the experimental group ($M = 22.4$, $SD = 2.63$) and the control group ($M = 28.67$, $SD = 2.63$) at pretest, $F(1, 28) = 2.83$, $p = .103$. This suggested both groups displayed similar patterns of responding at pretest. The results did show a significant difference between the experimental group ($M = 17.13$, $SD = 2.64$) and the control group ($M = 27.4$, $SD = 2.64$) at posttest, $F(1, 28) = 7.53$, $p = .01$, $\eta_p^2 = .212$. The results indicated that the experimental group compared to the control group had increased psychological flexibility as measured by the AFQ-Y after completing the Mindfulness Camp intervention. For the experimental group, a 67% change was shown in the scores, which suggested that 10 out of 15 participants demonstrated increased psychological flexibility. For the control group, a 13% change was shown in the scores, which suggested that 2 out of 15 participants demonstrated increased psychological flexibility. Figure 1 displays the average across both groups on the AFQ-Y at both time periods.

CAMM

A significant difference was shown between pretest ($M = 25.46$, $SD = 5.04$) and posttest ($M = 29.66$, $SD = 7.16$) time periods, $t(15) = -2.33$, $p = .035$. The results indicated the experimental group demonstrated increased mindful awareness after the intervention.

The results showed there was no significant difference between the experimental group ($M = 25.46$, $SD = 1.65$) and the control group ($M = 22.86$, $SD = 1.65$) at pretest, $F(1, 28) = 1.23$, $p = .275$. This suggested that both groups displayed similar patterns of responding at pretest. The results did show a significant difference between the experimental group ($M = 29.66$, $SD = 1.99$) and the control group ($M = 21.26$, $SD = 1.99$) at posttest, $F(1, 28) = 8.89$, $p = .006$, $\eta_p^2 = .241$. These results indicated the experimental group compared to the control group had a significant increase in their overall mindful awareness. For the experimental group, an 80% change was shown in the scores, which suggested that 12 out of 15 participants demonstrated increased mindful awareness. For the control group, a 53% change was shown in the scores, which suggested that 8 of the 15 participants demonstrated increased mindful awareness. Figure 2 displays the average across both groups on the CAMM at both time periods.

Social Validity: Children

The mean for Question 1, "How much did you enjoy the mindfulness activities?" was 3.11; Question 2, "How much did you learn by doing the mindfulness activities?" was 3.0; Question 3, "How much did you learn about feelings?" was 2.76; Question 4, "How much did you learn about present-moment awareness and attention?" was 3.11; and Question 5, "How often do you use the ideas and skills learned in the mindfulness program?" was 3.05. Overall, the results indicated the mindfulness activities used with the experimental group were well received, the participants enjoyed the activity engagement, and the camp taught skills they would use in their daily lives.

Social Validity: Caregivers

The mean for Question 1, "How useful did you find the Mindfulness Camp for enhancing your child's attention

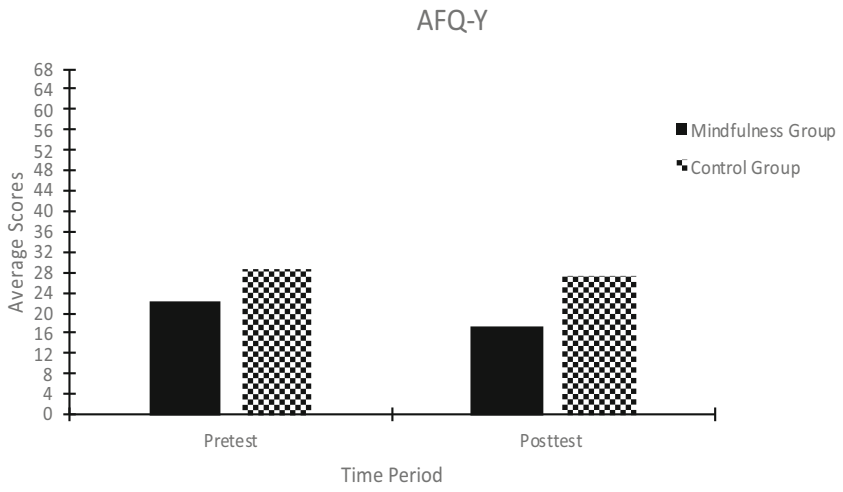

Fig. 1 The average scores at pretest and posttest on the AFQ-Y for the experimental and control groups

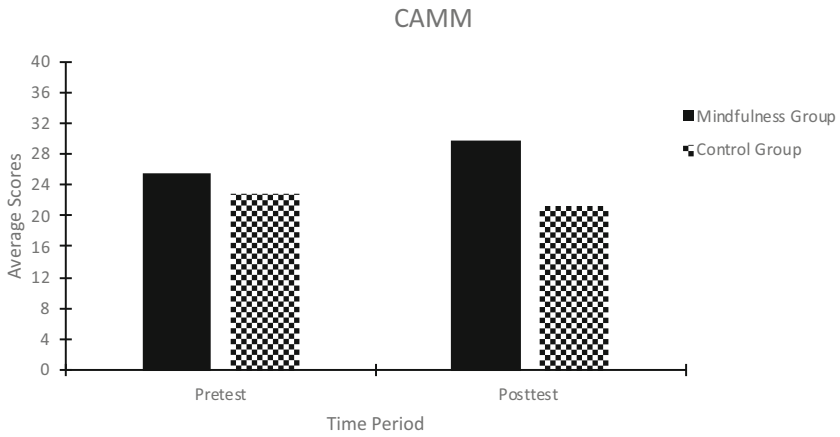

Fig. 2 The average scores at pretest and posttest on the CAMM for the experimental and control groups

and focus?" was 3.0; Question 2, "How much do you think your child learned about understanding mindfulness (in general)?" was 3.33; Question 3, "How much do you think your child learned about applying mindfulness during the day (engaging in mindfulness/present-moment awareness during the day)?" was 3.11; Question 4, "Does your child talk about mindfulness or things learned at camp outside of camp?" was 2.88; Question 5, "How much do you think your child enjoyed the Mindfulness Camp?" was 3.22; and Question 6, "How often does your child use the ideas (skills) learned in the Mindfulness Camp?" was 2.67. Additionally, all caregivers indicated in response to Question 7 they would enroll their children in camp again.

Discussion

The present experiment was a preliminary investigation to determine whether implementing an ACT curriculum and mindfulness activities in a camp setting with a neurotypical population would increase psychological flexibility and mindful awareness. First, increases in psychological flexibility were observed to occur for 80% of participants in the experimental group after participating in the Mindfulness Camp. The outcomes on the self-report AFQ-Y suggest that participants demonstrated higher rates of psychological inflexibility prior to the intervention. The high scores on the psychological flexibility measure may serve as an indicator for the necessity to implement ACT interventions with neurotypical populations. Furthermore, the results support previous literature that suggests that using ACT with children increases psychological flexibility and helps to better understand children's private events and personal experiences (Hayes et al., 2006).

Second, the impact the Mindfulness Camp had on mindful awareness was determined. The results of the posttest indicate significant differences between the experimental group and control group scores. That is, after the Mindfulness Camp, 67% of the experimental group demonstrated higher scores on the CAMM, which suggests an increase in overall mindful awareness. The higher outcomes on mindful awareness prior to the intervention may serve as another indicator for the necessity of implementing ACT curricula with neurotypical populations.

Third, as demonstrations of mindfulness with neurotypical children are scant in the literature (Burke, 2010), the present experiment serves as a demonstration of an applied application of an acceptance- and mindfulness-based intervention with children from a community sample. By using a neurotypical sample in a community setting, this study extends the literature by providing an application of an acceptance- and mindfulness-based intervention with children that uses a control group (Burke, 2010). The findings suggest that acceptance- and mindfulness-based interventions may be effectively implemented in nonclinical settings, thereby expanding the potential outreach in community settings for both clinicians and participants.

Furthermore, Burke (2010) states that mindfulness outcomes with children are limited in the literature due to previous studies' failure to use randomized control groups, to use nonclinical populations, and to provide detail of the intervention. The present experiment controlled for these limitations in the following ways. First, this study was conducted in an applied setting during the summer, when children were out of school and could more readily access the camp. Next, the mixed-factorial pre-post design with an age-matched control group allowed for further investigation into the effectiveness of the intervention compared to a no-treatment control group. Additionally, the use of an ACT curriculum for

children allows for the details of the intervention to be easily accessed and replicated. The study also provides social validity outcomes based on child responding. Previous research determined the efficacy of acceptance- and mindfulness-based interventions based on parent report; however, they failed to determine the children's perspectives (Goodman & Greenland, 2009; Semple, Reid, & Miller, 2005). This measure is important as it further supports that ACT and mindfulness are accessible and user-friendly interventions not only well received by caregivers but also well received by the children engaging in the activities. This outcome suggests that children are willing to engage in an acceptance- and mindfulness-based camp and may be open to future participation.

Furthermore, the results from this study suggest that mindfulness and acceptance-based interventions, such as ACT, may be effective with neurotypical youth populations. This implication is important as it suggests that ACT may increase overall psychological well-being for neurotypical children in a nonclinical setting.

Overall, the preliminary outcomes of this study suggest that implementation of ACT with children is an effective intervention to increase psychological flexibility. However, the investigation remains incomplete. The results of this study may warrant some caution in the interpretation, as several limitations apply. The implementation of the study in an applied setting increases the external validity of the study but sacrifices some of the environmental control. Moving studies from the laboratory to the applied setting is necessary to determine treatment effectiveness, though potential extraneous variables and environmental stimuli cannot be controlled for. For example, the effects of the behavior of participants toward others cannot be controlled for and may affect how the participants interact with the presentation of the material. However, the investigation of ACT in applied settings is necessary to determine the effectiveness and application of techniques when in natural environments. Due to the open nature of the camp setting, any participants that signed up for camp were able to participate. This limitation does not allow for randomization of participants who actively enrolled in camp.

Another limitation is the absence of objective dependent measures. The outcomes of this study rely on self-report measures by both the experimental and control groups. This is an important aspect to consider to determine if an individual's perception of the intervention impacts the effectiveness of it.

Future studies may seek a wait-list control group to strengthen the internal validity of the results. Additionally, the use of a relatively small sample size in this study may be another limitation. The small sample size was due to the applied setting and the necessity for camp enrollment to be low with a high participant-to-instructor ratio; however, increases in the number of participants is important to investigate in future studies.

Further research is necessary to determine if Mindfulness Camps can be replicated with similar self-report outcomes; additionally, future research should collect follow-up data and use measurable and objective dependent variables to determine if acceptance and mindfulness interventions increase overall behavior management. One recommendation for collecting objective data is the use of a group contingency system throughout the duration of camp. In a group-based point system, participants can earn points based on their behavior at camp, with the contingency of earning or losing points for social and ACT-related behaviors that are operationally defined at the beginning of camp. Collecting data on target behaviors throughout the duration of camp allows future researchers to determine if there is a correlation between observable behaviors at camp and the participants' self-report outcomes.

Last, the ability to control for presenting disorders beyond caregiver report was not feasible due to the nature of the camp setting. It is unknown whether any of the participants met the criteria for psychological disorders, which were not formally diagnosed at the time of the study. Future research should further examine whether psychological disorders are present prior to children's participation in a Mindfulness Camp.

In sum, this study examined the impact a Mindfulness Camp had on psychological flexibility and mindful awareness and sought to expand the research on ACT with children. Using mindfulness activities and ACT as a treatment with children may help target psychological inflexibility and address the needs of children, in an open, accepting, easily implemented format, which may have positive, lasting outcomes in children's lives. Perhaps the collective outcomes of the present study will help guide scientists and practitioners in the investigation of implementing ACT with various child populations.

Compliance with Ethical Standards

Conflict of Interest Mary Rachel Enoch declares she has no conflict of interest. Mark R. Dixon declares that he receives small royalties from the sales of the ACT curriculum.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all caregivers of individuals who participated in the study.

Appendix

Table 1 Daily schedule of activities with group size

Activity	Group size
ACT activity	Large group activity
Mindfulness activity	Small group activity
Yoga	Large group activity
ACT activity	Small group activity
ACT activity	Small group activity
Daily Experience Log	Large group activity

Table 2 ACT Activities and Processes Targeted

Activity Description

Each of the ACT activities were implemented exactly as outlined in the curriculum. The following is a list of the activities that were used across the 5 days of camp, with three ACT activities being presented each day. The camp staff presented each of the activities, and all campers were invited to share with the group upon the completion of the activity.

Activity[a]	ACT Process Targeted
What Are Your Values? (Day 31)	Values
Driving the Train (Day 32)	Values
Let It Be (Day 33)	Values
Hamburger Mind (Day 34)	Values
Values Horseshoes (Day 39)	Values
Riding the Bike (Day 40)	Committed action
Racing to Value (Day 42)	Values, acceptance
As Seen on TV (Day 74)	Present-moment awareness, values, committed action, self-as-context, defusion, acceptance
Thoughts, Thoughts, Thoughts (Day 125)	Present-moment awareness, defusion
I Scream, You Scream (Day 161)	Self-as-context

Please contact the first author for camp activity details

[a] Activities from the curriculum *ACT for Children With Autism and Emotional Challenges* (Dixon, 2014)

Table 3 Mindful walking activities, mindful listening activities, yoga, and daily experience log

Activity	Description
• Yoga	• Camp instructor leads group through various mindful yoga poses. • Group is guided to focus on breath, present moment, and body sensations.
• Counting Sounds (mindful walking)	• Group goes for a walk and individuals count or list all the different sounds that they hear. • Group comes together and discusses different sounds individuals heard, being aware of their environment.
• Rainbow Walk (mindful walking)	• Group goes for a walk and individuals look for something red, orange, yellow, green, blue, and purple. Individuals keep going through the colors, in order, until the end of the walk. Individuals note and/or sketch something they saw in each of the colors. • Group comes together and discusses each colored item individuals saw while being aware of their environment.
• Walking Meditation (mindful walking)	• Group goes for a walk and individuals are encouraged to focus on the sounds and feelings of their feet on the ground and notice what thoughts they have. • Group comes together and discusses what individuals felt and heard and how their thoughts impacted their awareness of the environment.

Table 3 (continued)

Activity	Description
• Bird Collection (mindful walking)	• Group goes for a walk and individuals are encouraged to pretend to be birds while walking. Individuals are encouraged to be silent while they collect items that they notice.
	• Group comes together, compiles the collection, and discusses how each item is different. Individuals are encouraged to discuss what they felt and heard and their awareness of their bodies in the environment.
• Slow Motion (mindful walking)	• Group goes for a walk and individuals are encouraged to walk in slow motion. Individuals are encouraged to be silent while they notice how their bodies move when they walk slowly and what thoughts their minds attend to while outside.
	• Group comes together to discuss individuals' experience of slow-motion walking and what they noticed in their environment.
• Are You Listening to Me? (mindful listening)	• Instructor plays different sounds and invites individuals to be aware of what they are hearing and encouraged to notice what thoughts they have as they listen to the sounds.
	• After playing a variety of sounds, the group discusses the sounds individuals heard and if their thoughts wandered during the activity.
• Personal Weather Report (mindful listening)	• Individuals create a picture that depicts how their feelings are like the weather.
	• Individuals are invited to share their experiences with the group.
• 3rd-Eye Diamond (mindful listening)	• Instructors pass out stones to each individual, and they are invited to place the stones on their foreheads.
	• Individuals are asked to focus on the stone and then expand their awareness to different parts of their bodies, to sounds in the room, and then back to the stone.
	• Individuals discuss as a group what sensations they felt in their bodies, what sounds they heard, and what their breathing felt like while they shifted their attention.
• The Wishing Tree (mindful listening)	• Individuals are invited to lay on their yoga mats while the instructor reads the mindful meditation.
	• Individuals are invited to notice their thoughts and attend to the present moment.
• Stretching and Breathing (mindful listening)	• Individuals are invited to notice their breath and how different parts of their bodies feel.
	• Individuals are reminded to attend to the present moment and the different sensations they experience in their bodies.
• Daily Experience Logs	• Camp instructors encourage all campers to complete their Daily Experience Logs at the end of the camp day.
	• All campers are asked to reflect on their day at camp and encouraged to write or draw about it, how it landed for them, or how they responded to it.

References

Biglan, A., & Hayes, S. C. (1996). Should the behavioral sciences become more pragmatic? The case for functional contextualism in research on human behavior. *Applied and Preventive Psychology, 5*(1), 47–57.

Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies, 19*(2), 133–144.

Ciarrochi, J., Kashdan, T. B., Leeson, P., Heaven, P., & Jordan, C. (2010). On being aware and accepting: A one-year longitudinal study into adolescent well-being. *Journal of Adolescence, 34*(4), 695–703.

Codd, R. T., Twohig, M. P., Crosby, J. M., & Enno, A. (2011). Treatment of three anxiety disorder cases with acceptance and commitment therapy in a private practice. *Journal of Cognitive Psychotherapy, 25*(3), 203–217.

Coyne, L. W., McHugh, L., & Martinez, E. R. (2011). Acceptance and commitment therapy (ACT): Advances and applications with children, adolescents, and families. *Child and Adolescent Psychiatric Clinics, 20*(2), 379–399.

Dixon, M. R. (2014). *ACT for children with* autism *and emotional challenges*. Carbondale, IL: Shawnee Scientific Press.

Dixon, M. R., & Paliliunas, D. (2018). *AIM: A behavior analytic curriculum for social-emotional* development *in children.* Carbondale, IL: Shawnee Scientific Press.

Enoch, M. R., & Dixon, M. R. (2017). The use of a child-based acceptance and commitment therapy curriculum to increase attention. *Child & Family Behavior Therapy, 39*(3), 200–224.

Fletcher, L., & Hayes, S. C. (2005). Relational frame theory, acceptance and commitment therapy, and a functional analytic definition of mindfulness. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 23*(4), 315–336.

Goodman, T. A., & Greenland, S. K. (2009). Mindfulness with children: Working with difficult emotions. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 417–429). New York, NY: Springer Science + Business Media.

Greco, L. A., & Hayes, S. C. (2008). *Acceptance and mindfulness treatments for children and adolescents: A practitioner's guide*. Oakland, CA: New Harbinger Publications.

Greco, L. A., Dew, S. E., & Baer, R. A. (2005). Acceptance, mindfulness, and related processes in childhood: Measurement issues, clinical relevance, and future directions. In S. E. Dew & R. Baer (Chairs), *Measuring acceptance, mindfulness, and related processes: Empirical findings and clinical applications across child, adolescent, and adult samples*. Symposium conducted at the Association for Behavior and Cognitive Therapies, Washington, DC. Retrieved from https://doi.org/10.1177/1359104508090603

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the avoidance and fusion questionnaire for youth. *Psychological Assessment, 20*(2), 93–102.

Greco, L. A., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). *Psychological Assessment, 23*(3), 606–614.

Hancock, K. M., Swain, J., Hainsworth, C. J., Dixon, A. L., Koo, S., & Munro, K. (2016). Acceptance and commitment therapy versus cognitive behavior therapy for children with anxiety: Outcomes of a randomized controlled trial. *Journal of Clinical Child & Adolescent Psychology, 47*(2), 296–311.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1–25.

Hayes, L., Boyd, C. P., & Sewell, J. (2011). Acceptance and commitment therapy for the treatment of adolescent depression: A pilot study in a psychiatric outpatient setting. *Mindfulness, 2*(2), 86–94.

Hayes, S. C., Levin, M. E., Plumb-Vilardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy, 44*(2), 180–198.

Heffner, M., Sperry, J., Eifert, G. H., & Detweiler, M. (2002). Acceptance and commitment therapy in the treatment of an adolescent female with anorexia nervosa: A case example. *Cognitive and Behavioral Practice, 9*(3), 232–236.

Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 78*(2), 169–183.

Howell, A. J., Digdon, N. L., & Buro, K. (2010). Mindfulness predicts sleep-related self-regulation and well-being. *Personality and Individual Differences, 48*, 419–424.

Kennedy, A. E., Whiting, S. W., & Dixon, M. R. (2014). Improving novel food choices in preschool children using acceptance and commitment therapy. *Journal of Contextual Behavioral Science, 3*, 228–235.

Livheim, F., Tengström, A., Bond, F. W., Andersson, G., Dahl, J., & Rosendahl, I. (2016). Psychometric properties of the avoidance and fusion questionnaire for youth: A psychological measure of psychological inflexibility in youth. *Journal of Contextual Behavioral Science, 5*(2), 103–110.

Metzler, C. W., Biglan, A., Noell, J., Ary, D. V., & Ochs, L. (2000). A randomized controlled trial of a behavioral intervention to reduce high-risk sexual behavior among adolescents in STD clinics. *Behavior Therapy, 31*(1), 27–54.

Schmaltz, J. E., & Murrell, A. R. (2010). Measuring experiential avoidance in adults: The avoidance and fusion questionnaire. *International Journal of Behavioral Consultation and Therapy, 6*(3), 198–213.

Semple, R. J., Reid, E. F., & Miller, L. (2005). Treating anxiety with mindfulness: An open trial of mindfulness training for anxious children. *Journal of Cognitive Psychotherapy, 19*(4), 379–392.

Swain, J., Hancock, K., Dixon, A., Koo, S., & Bowman, J. (2013). Acceptance and commitment therapy for anxious children and adolescents: Study protocol for a randomized controlled trial. *Trials, 14*(1), 140.

Wicksell, R. K., Dahl, J., Magnusson, B., & Olsson, G. L. (2005). Using acceptance and commitment therapy in the rehabilitation of an adolescent female with chronic pain: A case example. *Cognitive and Behavioral Practice, 12*(4), 415–423.