



Effect of mindfulness-based training on aggression and empathy of adolescents at the juvenile correction and rehabilitation center

Simin Hosseinian¹, Roghieh Nooripour¹, Gholam Ali Afrooz²

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1. Department of Counseling, Faculty of Educational Sciences and Psychology, Alzahra University, Tehran, Iran

2. Department of Psychology and Education of Exceptional Children, Faculty of Psychology and Education, University of Tehran, Tehran, Iran

Correspondence to: Roghieh Nooripour, Department of Counseling, Faculty of Educational Sciences and Psychology, Alzahra University, Tehran, Iran
Email: moori@alzahra.ac.ir

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Abstract

The juvenile correction and rehabilitation center is a place for reforming and rehabilitating juvenile adolescents. The aim of this study was to determine the effect of mindfulness-based training on aggression and empathy of adolescents at the juvenile correction and rehabilitation center in Tehran. The research was a quasi-experimental design with pretest-posttest and the control group. The statistical population of the study was all of the adolescents in the juvenile correction and rehabilitation center in Tehran. In this research sampling method was convenience sampling method (availability sampling). In this regard, two groups of 16 were selected for each experimental and control. At the implementation stage, 4 participants from the experimental group and 4 from the control group were excluded. Finally, sample of 24 adolescents was randomly assigned into experimental and control groups and responded to the Batson Empathy Questionnaire and Buss and Warren's aggression questionnaire. The experimental group received a 90-minute session for 8 sessions and a weekly 90-minute session, and no training was taken in the control group. Multivariate covariance and variance analysis was used for data analysis. The results showed that there is a significant difference between the two groups of experimental and control after the implementation of mindfulness-based training in terms of empathy and aggression components. Mindfulness-based therapy led to empathy promotion and reduction of aggression components in adolescents at the juvenile correction and rehabilitation center.

Keywords: Adolescent, Aggression, Empathy, Juvenile, Mindfulness

Introduction

One of the subjects studied in adolescents is to identify their compatibility characteristics, and the shortage in this area can have harmful consequences such as delinquency [1].

The institutes mentioned in the Iranian legal system are referred to as the Correction and Rehabilitation Center which is the center for the maintenance, refinement, and upbringing

of children and adolescents convicted of committing a victim [2].

In trying to explain offending, criminologists have postulated that those who offend, and those who act antisocially, have less empathy than those who do not offend [3-5]. This is because individuals who share and/or comprehend another's a negative

emotional reaction, which occurs as a result of their own antisocial or aggressive behavior, may be inhibited and less inclined to continue with this behavior or act in an antisocial or aggressive manner in the future [6]. Empathy is, therefore, viewed as an individual protective factor, decreasing the probability of certain types of criminal behavior, while a lack of empathy is assumed to have a facilitating influence on offending. For example, Pechora et al, [7] suggested that offenders are relatively poor at role-taking and perspective-taking and may misinterpret other people's intentions. This lack of awareness or sensitivity to other people's thoughts and feelings impairs their ability to appreciate the effects of their behavior on other people." Other criminologists have also highlighted the potential significance of empathy in relation to delinquency; the "ability to imagine the distress of another may inhibit harmful behavior" [8].

Programs designed to increase empathy in offenders are regular components of many prison treatment programs [9], especially those designed for sexual offenders. The assumption that recidivism can be reduced by increasing empathy is very common. Hockley et al, [10] stated that, "...increasing empathy is often seen as the key to reducing the likelihood of offending against others. Some form of empathy training is, therefore, a common treatment component of those convicted of crimes such as assault, robbery, murder, and sexual assault." There has been a substantial increase in the use of cognitive-behavioral strategies in prison treatment programs, and these are often intended to increase empathy [4]. The conceptual connection between low empathy and offending (particularly sexual or violent offending) is obviously well entrenched in mainstream criminological thought. However, the empirical evidence for differences in empathy levels between offenders and non-offenders appears equivocal. Some studies have found that offenders have significantly lower empathy than non-offenders [11], others have not found this.

On the other hand, violence has been seen

throughout the world in the lives of many people, and it affects all of us [12].

By observing domestic violence or experiencing physical or sexual abuse, children and adolescents see violence as an acceptable means of solving their problems, either in the community or among their peers or even against their parents and siblings, and especially in their future family life. Given the extent, incidence and unpleasant effects of aggressive behavior, aggression has long been considered a problem requiring clinical and legal investigations [13].

Given that this kind of violence occurs within the family and since the safest place for the child should be his family, there is no doubt that the consequences can be very unpleasant [14].

Violence acts and aggressive behavior in human societies have been common for a long time. Referring to figures in articles and scientific resources warns us of violence and conflicts leading to high murder and suicide rates (as the most severe forms of external and internal aggression, respectively). Over recent years, there have been two trends in aggressive behavior. The first is increased aggression in various social groups and decrease in aggressive individuals' average age to involve adolescents in most beatings. The second one in schools is an increase in such behaviors. Uncontrolled aggression causes problems in adolescents' social, occupational, educational, physical and mental health. It also predicts alcohol and drug abuse, smoking, low school adaptability, educational failure, depression, delinquency, and other adolescent disorders [15].

Cognitive-behavioral therapy, hybrid programs, gesture therapy, abreaction, development of social skills, and medical therapy are some methods of aggression's treatment. As it trains cognitive abilities to manage aggressive behavior as a new therapeutic method, mindfulness therapy can reduce aggression [16].

Mindfulness is described from Eastern meditation as a method of paying attention (full

attention) to the present moment's experience. Segal et al, [17] developed Mindfulness-Based Training as an 8-week program with group-held sessions primarily based on mental stress reduction.

MBSR program was devised by Kabat-Zinn [18]. This program encompasses some elements of the cognitive therapy that separate an individual's view from his/her thoughts (e.g. statements such as "thoughts are not facts" and "I am not my thoughts"). [19]. Similarly, mindfulness based cognitive therapy could be used for cognitive behavioral therapy, considered to be a valid therapy for the management of an aggressor. There is some evidence that awareness reduces physical and mental problems. These include chronic pain and relapse of depression [20], mood and stress disorder [21], and anxiety. Until present, however, several attempts investigating the effectiveness of this approach on anger and aggression have failed.

The observation without judgment provides the opportunity to recognize the consequences of a certain behavior (e.g. irritating the boss with frequent delays). This recycling will result in more effective changes in behaviour. Nonetheless, the goal of mindfulness training is to learn to observe without judging the current conditions; the conditions that may lead to automatic nervous system arousal, competitive thoughts, muscle tension and other phenomena that are incompatible with relaxation [22].

Studies on the effectiveness of mindfulness-based cognitive therapy in reducing driver aggression and anger [23] and married males [24] showed a significant reduction in anger and aggression and increased self-control in aggressive behavior [25].

Momeni et al. [26] reported that all participants in mindfulness training had a positive effect on their lives and how they coped with their anger. In addition, the effectiveness of mindfulness in reducing depression and anxiety [27] and in suicidality depressed patients [28] has shown that it reduces negative automatic thoughts and dysfunctional attitudes, increases the interest in life, desire to survive, cope with the problems

of life, and improve the functioning of the family, educational and occupational system among suicidal patients.

For the following reasons, aggression is considered a major human relationship problem:

1) uncontrolled aggression causes adolescent social, occupational, educational, and physical and mental health problems. 2) Alcohol and drug use predictors, smoking, low school adaptability, educational failure, depression, delinquency, and other disorders [29]. 3) It increases youth violence, domestic abuse, racial differences [30]. A group of specialists argued that in juvenile delinquents' depression, physical complaints, and aggression are twice that of other youths. In addition, not only the mentally disordered delinquents committed more mistakes in prison, but they were also more likely to be victimized by the other [31].

In view of the prevalence of aggressive behavior and defects of different therapeutic methods, and since many cohort studies [17,19] have been reported to have weak designs and limited effectiveness; and with regard to the success of mindfulness, on the other hand, the results of the researches show that punishment and punishment can not only prevent aggression and crime, also can sometimes increase intensity and numbers of crime; therefore, present study was conducted to partially address these issues.

The aim of this study was to determine the effectiveness mindfulness-based training on aggression and empathy of adolescents at the juvenile correction and rehabilitation center in Tehran so research hypotheses were as below:

Mindfulness-based training is effective on aggression of adolescents at the juvenile correction and rehabilitation center in Tehran. Mindfulness-based training is effective on empathy of adolescents at the juvenile correction and rehabilitation center in Tehran.

Method

This research was a quasi-experimental and pretest, posttest design with control group. In this study, there were two groups that, for

the experimental group, mental-based therapy were performed as an independent variable and the control group received no treatment. The population of this study included all of the adolescents at the juvenile correction and rehabilitation center in 2018 in Tehran, Iran. The sampling method was a convenience sampling method (availability sampling) that in this way, two groups of 16 experimental and control groups were selected by referring to the juvenile correction and rehabilitation center. At the implementation stage, 4 patients from the experimental group and control group retract from the study. A sample of boy students of the third-grade secondary school in there was randomly selected and then were assigned into experimental and control groups (n=12).

Inclusion criteria for research was; ages 12-18, non-drug abuse and substance dependence, lack of psychosocial drugs, lack of grief experience in the past 6 months, such as divorce and close relatives, participants at the same time shouldn't participate in any psychological training course and did not have acute and chronic physical illness (according to their health records and counseling). Also, the exclusion criteria included more than two absentee sessions, dealing with severe stressful events, or lack of corporation with the class assignments and the reluctance to continue to attend the research process.

The Aggression Questionnaire (AQ; Buss and Warren 2000 [32]): A self-report measure of anger and aggression was used to assess participants' levels of anger and aggression. This 34-item Likert scale can be used with individuals between the ages of 9 and 88. The AQ provides an overall measure of anger and aggression (AQ Total), as well as five additional subscales: Physical Aggression (e.g., I may hit someone if he or she provokes me.), Verbal Aggression (e.g., When people annoy me, I may tell them what I think of them.), Anger (e.g., At times I get very angry for no good reason at all.), Hostility (e.g., At times I feel I have gotten a raw deal out of life.), and Indirect Aggression (e.g., When someone really irritates me, I might give him or her the

silent treatment). The internal reliabilities for this instrument in this sample were: AQ Total (0.94), Physical Aggression (0.88), Verbal Aggression (0.76), Anger (0.78), Hostility (0.82), and Indirect Aggression (0.71) [33]. These internal consistency estimates were consistent with the estimates reported in the AQ manual for the standardization sample. In addition, correlation between the AQ with peer nominations for anger and hostility traits, and other measures of anger established construct and criterion related validities. The anger scale reflected the negative phenomenological state of trait anger, whereas the physical, verbal, and indirect aggression scales represented various ways that aggression could be expressed toward people and objects. Hostility differs from anger and aggression in that it was classified as an attitude. Hostility was defined as negative attitudes of resentment and suspiciousness that increased the likelihood of an anger response [33]. Askari [34] in Iran reported its Cronbach's alpha from 0.84 to 0.91. In this research, for this questionnaire Cronbach's alpha was 0.68.

Batson Empathy Questionnaire (1983): This questionnaire was developed by Batson et al, [35] in 1983 measures emotional empathy in 8 items that in a list of sympathetic empathy, sympathy, worry, affection, compassion, softness and intimacy, softness and reasonableness are measured on a Likert scale. This tool has been extensively used in researches about empathy. Jolliffe and Farrington [36] reported the reliability of this questionnaire by internal consistency in the range of 0.087-0.092. In the researches of Khojestan Mehr et al., [37] calculated the reliability coefficient of this scale by using Cronbach's alpha method 0.08. In this research, for this questionnaire Cronbach's alpha was 0.75.

Eight 90-minute mindfulness training sessions were held at the center, twice a week and the control group received no training.

It should be noted that the training program was carried out by two counselors and was conducted on adolescents at the juvenile

correction and rehabilitation center in Tehran. At the end of the last session, the participants (in control and experimental groups) completed

the questionnaire and was described based on Segal et al [17], Mohammadkhani et al, [38]. The sessions were as follows:

The first session	The general formulation of references, the introduction of a model, automatic guidance to the mind, concentration on the body and the experience of body senses another way to gain insight into the inner experiences.
The second session	Eating raisins with the presence of the mind, physical examination, focusing attention on everyday activity coupled with the state of mind and training, which limits the negative thoughts and the creation of our communication with experience (the thoughts of the truth)
The third session	Review of the previous session, physical examination exercise, ten minutes of mind-set on the respiratory flow, the training of thoughts and feelings, the definition of emotion and the identification of positive and negative emotions, teaching the recording of desired events, focusing attention on daily activities associated with the state of mind.
The fourth session	Review the previous session, meditate on seeing and hearing, sitting meditation (consciousness of breathing, body, sounds, thoughts), defining principles and rules governing thrill, regular three-minute breathing space, three-minute breathing space confrontational
The fifth session	Reviewing 40 minute meditation sessions, Breathing awareness, body, sounds and thoughts, how your reactions to thoughts, feelings and body feelings, how to connect with experiences, to deliberately bring about problems and difficulties, and in the same Now trying to attend the present and accept them as they are.
The session six	Review assignments, provide examples and solutions that thoughts are just thought, not meditation sentimental 40 minutes, attention when people's thoughts and mood do not allow others to take a point. Practice point-of-view or breathing substitute thoughts. The emphasis on breathing is the first step in knowing thoughts and noting that responding to thoughts is not the only way to establish a different relationship with them, providing assignments.
The seventh session	Reviewing homework and reviewing sessions, sitting meditations (awareness of breathing, body, sounds and thoughts), understanding the relationships between activity and creation, providing a list of pleasure activities and activities that give the person a sense of domination. . Three minutes of regular breathing space.
The eighth session	Reviewing the session, reviewing the session, reviewing the body, reviewing the course, methods for remaking learned achievements, selecting a homework program that can be continued until next month, discussing positive reasons and possible obstacles for exercises after the end of the course, the accumulation of learning for the future, and the new beginning for the remainder of life, the regular training of the mind helps maintain a balance in life, and completes the survey form by the participants.

The ethical considerations of the research are as that at the beginning of the research, with honest explanation of the objectives of the plan, we were informed about the consent of the individuals to participate in the research. In the implementation of the research, it has been tried to provide them with effective communication with the participants regarding the probable problems (anxiety caused by responding to the participants, reducing self-esteem or confidence, the subjects' concern regarding the effect of the results on their fate, and...) be protected. The confidentiality and confidentiality of information is maintained by both the implementer and the colleagues of the researcher. If a person personally showed his unwillingness to participate in the research, he would not have the right to study in accordance with the principles of human rights and to continue to participate in the

study. Therefore, in all of the research activities of the research, we tried to avoid any physical, psychological, social, and so on harm to the participants. Participants were assured that the way in which the results of the research report were to guarantee their material and immaterial rights and related to the research. At no stage of research, the costs were not imposed on the participant. A life skill training workshop was held for the control group after the research. After the end of mindfulness therapy, the questionnaires were used in the posttest from both groups and finally the mean and standard deviation and multivariate covariance and analysis of variance were used by SPSS-22 for data analysis.

Results

The mean and standard deviation of the

participants' age in the experimental group were 12.93 ± 2.64 and 13.15 ± 2.15 , respectively. In

Table 1, the mean of aggression and empathy are presented.

Table 1 Mean and standard deviation of pretest and posttest scores of empathy and components of aggression

Variable	Experimental				Control			
	Pretest		Posttest		Pretest		Posttest	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Empathy	14.23	2.25	25.14	3.30	14.75	2.10	14.33	2.03
Aggression total	27.95	4.97	19.64	2.13	25.53	4.21	24.75	3.87
Physical aggression	16.20	4.75	10.72	3.21	17.14	3.97	18.32	4.02
Verbal aggression	15.28	3.38	11.21	2.47	15.03	3.12	16.24	3.69
Hostility	20.12	4.25	14.73	3.28	19.16	4.19	18.97	4.12
Indirect aggression	15.27	3.57	10.57	2.10	16.35	3.21	17.15	3.54

According to the Table 1, there was no significant difference between the mean scores of empathy and components of aggression in the experimental and control group in the pretest. However, the mean of the experimental group after mindfulness training showed a significant change in the mean scores of empathy and components of aggression in the experimental group compared with the control group. The mean of total empathy score after mindfulness training in the experimental group was changed (14.23 ± 2.25) to (25.14 ± 3.3036)

and the mean score of aggression after mindfulness training in the experimental group changed (27.95 ± 4.97) to (19.64 ± 2.13). In the analysis of the equivalence of variances, the standard method is the Box's M test which shows the homogeneity of variance-covariance matrices between dependent variables among independent groups. The result of the Box's M test in relation to the empathy and components of aggression shows that the homogeneity condition for variance-covariance matrices is correctly observed.

Table 2 Multivariate analysis of variance in mean of differential scores (pretest and posttest) of empathy and aggression in experimental and control groups

Test	Value	df ¹	df ²	F	Sig.
Pillai's trace	0.324	1	22	17.58	0.001
Wilks' lambda	0.526	1	22	17.58	0.001
Hotelling's trace	1.64	1	22	17.58	0.001
Roy's largest root	1.98	1	22	17.58	0.001

Based on the results of the Table 2, there is a significant difference in the level of ($p=0.001$) at least in one of the empathy and aggression between the experimental and

control groups after mindfulness training, but it is not clear which component has a significant difference that is presented in Table 3.

Table 3 Results of multivariate covariance analysis of mean posttest scores of research variables in test and control groups

Source	df	Mean square	F	Sig.	Etta	Observed power
Empathy	1	76.32	56.34	0.001	0.53	0.692
Aggression total	1	719.25	37.93	0.001	0.51	0.681
Physical aggression	1	215.65	29.87	0.001	0.42	0.503
Verbal aggression	1	280.47	24.74	0.001	0.38	0.472
Hostility	1	295.49	28.51	0.001	0.49	0.602
Indirect aggression	1	324.91	27.46	0.001	0.46	0.510

The Table 3 shows the effect of mindfulness in the experimental group for which overall, 53% of the change in the empathy score and 53% of the change in the aggression variable were related to the effect of mindfulness training.

Discussion

The results of this study showed that there is a significant difference between the experimental and control groups after the implementation of mindfulness in the empathy and the components of aggression. The level of empathy and the components of aggression in the experimental group were significantly different from the pretest and the control group it means empathy increased and components of aggression decreased after mindfulness training.

Explanatory mechanisms can explain how the training worked. The 8-week course was a multimodal training, including experiential exercises to cultivate mindful listening skills and empathy, teaching material on coping and stress, and in addition to formal meditation practice, providing group social support. Although consciousness was at the foundation of each of these components, it is difficult to determine the degree to which each individual contributed uniquely to the found effects. For example, it is difficult to decipher the degree to which expression and social support contribute individually to the overall effects of mindfulness training. The training provides an empathic, safe environment that encourages participants to share their experiences, feelings and difficulties. Therefore, some of the effects may be produced through the expression of emotions by participants, and the disclosure of personal stories.

Previously, mindfulness (awareness only) was found to be related to empathy (combined affective and cognitive) among counselors, but the results of the current study extend this research by further elucidating which aspects of mindfulness are related to specific empathy dimensions. In particular, compassion (toward others) was the only significant predictor of affective empathy, whereas both awareness and compassion (toward others) were significant

predictors of cognitive empathy. This is consistent with Birnie *et al.* [39], who found that mindfulness training increased perspective taking but not an empathic concern among the general population.

This finding is also consistent with previous [19,39] studies investigating the re-representation of aggressive behaviors following mindfulness-based trainings. These results also coincided with other research [25,29] on the effectiveness of mindfulness-based cognitive therapy in reducing aggression. It can be said that in relation to the effect of the mindfulness, sometimes on the verbal, physical, anger and hostility of aggression, people remember to deal with emotions and negative thoughts and experience the events of the mind positively. Also, regarding the efficacy of training, it can be noted that pathogenic attention is the basis of signs of anger and aggression and increased attention control should be effective in reducing anger. In the method of teaching mindfulness, person learns to clear mind from any judgment that leads to anger and aggression in self, and deeply focuses on the present and applies it to his everyday behaviors and activities. To increase control of attention, one learns to practice this practice in his or her life in an intermittent way in the work involved with it, in order to reach a point that is fully alert to time and place [6]. By mindfulness, individual gets calmer and more aware of self, and in times of fury, due to increased awareness of the individual, he/she becomes the first step in the self-awareness of the existence of anger and accepts it in the next steps in the pursuit of its administration. By self-consciousness and gaining the ability to review and rebuild the intensity and direction of excitement in themselves and others, individuals tend to modulate and control negative emotions inwardly and change their direction towards compromise [23].

The results of this study were consistent with Chilver *et al.* [40] about mindfulness in reducing hostility. These findings confirm the prevailing view that people who are

aware are less likely to respond aggressively to other people's aggression, threat, and insult. Mindfulness training encourages clients to learn concentration, non-judgment and acceptance, and live in the present. Mindfulness-based therapy offers cognitive skills, which lead to a change in cognition. This therapy is unique since it is not dependent on a second participant and is mostly preferred by clients with aggressive problems [28]. Studies show that, by reducing anger and maladaptive responses, mindfulness-based therapy makes people more exposed to anger-provoking stimuli. It also facilitates cognitive changes and helps to increase the ability to self-regulate by encouraging clients to view emotions such as anger as a temporary emotion, not as the consequences of some behavior.

The significant findings are reinforced because post-training data acquisition coincided with the test of subjects and also because the wait-list control group replicated these findings. The short-term outcomes are encouraging, suggesting that this training can be a useful complement to increase empathy and reduce aggression. Furthermore, these findings reinforce the hypothesis that mindfulness can be considered as a preventive approach for people, especially adolescents, at the juvenile correction and rehabilitation center, helping them to cultivate a way of being that can promote healing and growth in their own lives, as well as skills to help others heal and grow effectively in the future. The present study helps to provide a foundation by establishing the immediate effectiveness of mindfulness-based training from which future, more sophisticated studies can build the long-term implications of integrating mindfulness training into the center for juvenile correction and rehabilitation.

Further, because of the complexity inherent in mindfulness practice itself, there are probably multiple pathways by which it positively affects health. One possible hypothesis is that mindfulness training provides a powerful cognitive behavioral coping tool [14]. The training encourages alternative paradigms, and new interpretations of stress. It invites the participants to view stress as a challenge

instead of a threat. However, mindfulness differs from cognitive-behavior therapy. One crucial difference is that cognitive behavior therapy places an emphasis on distinguishing thoughts as positive or negative, whereas mindfulness simply acknowledges them [19]. Another important difference is that cognitive-behavior therapy teaches coping skills to use during stressful or anxiety producing moments, whereas mindfulness is not just a coping tool but a way of being to be practiced in all moments. Mindfulness involves adopting a new life perspective [20] which one carries through all situations, continuously, moment to moment.

Like all research projects, this study had limitations, some of which were the small number of the participants, the short interval between the posttest and delayed posttest and gender (females were not included). Therefore, further research is required to consider other factors. Larger samples, longer intervals between posttests and delayed posttests and inclusion of female at the juvenile correction and rehabilitation center can make the findings of the present study more generalizable and reliable. A further limitation of mindfulness-based interventions would be the cognitive status of the individuals. Like cognitive behavior therapy generally, there is an assumption that adolescents must function at a certain minimum cognitive level before they are able to fully benefit from mindfulness-based interventions. Future research could explore the lower limits of cognitive functioning required for mindfulness-based interventions.

Conclusion

In the context of mindfulness training, a number of novel features are introduced that have not been previously reported. The study documents the potential effectiveness of mindfulness training for empathy enhancement and aggression reduction. It explores how mindfulness training can help adolescents in their personal lives at the center for juvenile correction and rehabilitation.

Researchers should include client-outcome measures to understand whether greater mindfulness increases empathy and reduces aggression and, in turn, whether this relates to positive adolescent outcomes. Lastly, randomized controlled studies designed to measure specific changes as a result of mindfulness training are needed so that educators and supervisors can confidently use mindfulness training to help improve trainee performance and client outcomes.

This study has revealed that mindfulness-based training could abate the aggression and empathy of adolescents at the juvenile correction and rehabilitation center in a substantial manner. Also, it is interesting to note that execution of mindfulness-based training is simple and economical.

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Contribution

Study design: RN, SH, GHA

Data collection and analysis: RN, SH, GHA

Manuscript preparation: RN, SH, GHA

All authors have read and approved the final version.

Conflict of Interest

"The authors declare that they have no competing interests."

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Availability of data and materials

The datasets used and/or analyzed during this

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