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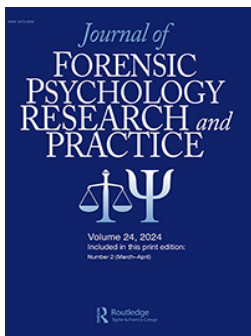
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Salutogenesis as a Mediator in Decreased Criminal Thinking: An Evaluation of Cognitive Programs for Juvenile and Adult Offenders

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ABSTRACT

This study is based on two previous studies that showed a post-treatment decrease in total criminal thinking (PICTS) and an increase in total sense of coherence (SOC) among youths and adults. The current study investigated whether these interventions changed the sub-scales of PICTS and SOC, and whether an increase in SOC would mediate a decrease in PICTS. Among both groups, the mean value of the sub-factors of PICTS decreased by the interventions, and increased for SOC sub-factors meaningfulness and manageability. Only among the adults, the increase in total sense of coherence and the sub-factor of manageability mediated the decrease of criminal thinking.

KEYWORDS

Salutogenesis; criminal thinking patterns; mediation effect; cognitive treatment programs; evaluation

Introduction

In recent years, various treatment programs have been developed in the field of offender rehabilitation (Beaudry et al., 2021; Pappas & Dent, 2023), such as the Swedish treatment programs A New Direction for young people and New Challenges for adult men (Lindblom et al., 2017, 2018). These programs are based on Walters (2020) cognitive theory of criminality as a lifestyle. The theory also emphasizes the importance of the development of internal value systems (i.e., salutogenic value systems) that run contrary to pathological criminal thinking (Walters, 2002). These programs are run in Sweden and are intended for lifestyle criminals. Lifestyle criminals habitually live and operate in criminal environments, and usually coincides with a self-image of being outside society (Walters, 2020). This type of criminality usually starts at a young age and includes a high frequency of crimes. To be considered a lifestyle criminal, it is required that the person has been arrested for at least three crimes in the past year or that the person has been convicted of at

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least five crimes in the past five years. For young people on their way into a criminal lifestyle, an early criminal debut (before the age of 15) is a criterion, and that the crimes before the age of 18 consist of both minor and serious crimes. Another criterion is that different crimes is combined with drug crimes or mental problems, which signals that the criminality has become a lifestyle, but also the person's socializing and deviant behavior. The programs have been evaluated in two effectiveness studies with a quasi-experimental design implemented in the everyday practice of regular substance abuse care, outside the correctional institutions (Lindblom et al., 2017, 2018). The main focus of these studies was the programs' impact on criminal thinking and sense of coherence (SOC; the capacity to deal with everyday life stressors) as salutogenic factors. The results showed that criminal thinking patterns were reduced, and SOC increased among both youth and adult offenders. The youth study comprised an individual treatment lasting 18 weeks and included participants from 14 to 21 years. It found that the participants' criminal thinking patterns decreased from high levels ($M = 63.47$) to levels corresponding with those of the normal population ($M = 49.64$). The results correspond to what previous research has found to be effective regarding lengths and content of programs for young offenders, as well as to the Swedish National Board of Health and Welfare recommendations (Socialstyrelsen, 2021; Olson et al., 2021). These types of programs are structured, aimed at specific risk factors and are behavior- and skill-oriented, usually including both youths and parents. The adult study – which included participants from 19 to 60 years and examined both individual and group treatments over six weeks – showed the same trend. The program reduced criminal thinking patterns from very high levels ($M = 78.77$) to values nearing those of the normal population ($M = 54.42$). The content of the program is similar to what previous research has found to be effective for adult offenders (Beaudry et al., 2021; Mitchell et al., 2012). Such programs include lessons and exercises to increase positive social skills, means-ends problem solving, critical reasoning, moral reasoning, cognitive style, self-control, impulse management, and self-efficacy (Landenberger & Lipsey, 2005).

The role of protective factors as mediators of change

In the two previous studies, we examined the programs A New Direction and New Challenges by looking at changes in the total score for criminal thinking (PICTS) and salutogenesis (SOC), respectively. The studies aimed to be a first step in the process of investigating the quality and effectiveness of the programs. However, at present, attention is increasingly focused on moderators and mediators of change and the construction of intervention models that emphasize the role of changeable transdiagnostic processes (Hayes & Hofmann, 2017). Psychological and mental health are not solely the absence

of disorders. As a purely syndromic focus weakens and a process focus strengthens, human psychological prosperity and the thriving of whole persons, not merely psychopathology, are also becoming more central. These changes in the approach to mental health and diagnosis are accelerating toward a process-based field that seeks to integrate the full range of psychosocial and contextual biological processes.

Previous research on mediators of criminality

The dual-factor model of mental health has garnered substantial support, positing the necessity of encompassing both negative (e.g., psychological problems) and positive (e.g., well-being) indicators in comprehensive evaluations of people's mental health (Iasiello et al., 2020). Positive mental health and mental illness are two distinct but interrelated domains of mental health; each having shared and unique predictors, influencing each other via complex interrelationships. Thus, it is important to increase knowledge of the variables that mediate the effect of treatments of antisocial characteristics such as criminal thinking, numbing of emotions, aggression, impulsivity, and recidivism. For youth offenders, the salutogenic concept of SOC, measured using the SOC-13 scale, has shown sensitivity to antisocial and rule-breaking behavior (Ristkari et al., 2009). Low SOC values have been shown to correlate with high levels of criminal offenses. In relation to juveniles, SOC is considered crucial for information processing in resolving conflicts and coping with enduring stress and has been shown to be a mediator between violence exposure and psychopathology. Kopusov et al. (2003) found that SOC partially mediated the link between victimization and psychopathology; the direct relationship between victimization and psychopathology decreased in size, suggesting that higher SOC levels can potentially reduce the level of psychopathology. These results are meaningful for clinical work as they suggest that preventive and therapeutic interventions should aim to increase SOC, which might be especially valuable for at-risk populations. However, a high SOC has also been related to the tendency among juveniles to turn to substitute activities as a means to cope with stress. Konaszewski and Niesiołędzka (2021) sought to determine the role of SOC and ego-resiliency as buffers for maladaptive coping among juveniles with varying levels of delinquency. The results showed that stronger levels of SOC meant that juveniles had a lower tendency to cope with stress by reducing emotional tension and, instead, turned to substitute activities. Thus, these findings reveal the deleterious effects of a lack of ego-resiliency, which implies confident optimism, productive and autonomous activity, interpersonal warmth and insight, and skilled expressiveness.

In terms of adult criminals, we did not find research on the mediating effects of SOC on antisocial characteristics or recidivism. SOC determines how a person handles stress (Antonovsky, 1987). During

stressful episodes, cognitive flexibility is reduced, which increases the risk of acting on the basis of habitual behavioral patterns; for criminals, this means lowered self-control (Bunker, 2011; Goldfarb et al., 2017). Although there is a lack of research on SOC and adult criminal behavior, there is some research on the concept of self-compassion, which is closely related to SOC. They both reflect one's coping capacity to deal with everyday life stressors. R. M. Morley et al. (2016) found that self-compassion was correlated with self-control, self-esteem, and social connectedness and was related to all six sub-scales of self-control. However, only low impulsivity predicted self-compassion. Furthermore, R. H. Morley (2017) found that self-compassion, criminal impulsivity, and length of practicing mindfulness meditation were all connected. The results also showed that the relationship between practicing mindfulness meditation and self-reported criminal impulsivity was mediated by self-compassion. Also, Ronel and Segev (2015) suggest that altruism, which relates to sense of coherence (Jakovljevic, 2018), can shape and control psychological abilities as the ability to regulate emotions. In addition, research has found that increased altruistic behavior after compassion training is associated with altered activation in brain regions implicated in social cognition and emotion regulation (Weng et al., 2013).

Thus, the current state of research raises the questions of whether factors that support health and well-being can mediate criminal thinking, and behavior and how the various salutogenic factors interact with the different patterns of criminal thinking. Further, very few studies have investigated whether there are differences between young and adult offenders regarding these aspects and how this knowledge could improve treatment.

Aim of the study

The purpose of the present study was to compare the effects of the cognitive programs for young offenders – A New Direction, and adult offenders – New Challenges (Lindblom et al., 2017, 2018), by examine whether the interventions decreased the sub-factors of criminal thinking (PICTS) and increased the sub-factors of sense of coherence (SOC). Second, the aim was to investigate whether the decrease in criminal thinking was mediated by the increase in the SOC total score and the components of SOC among the young and adult offenders, respectively. If so, in both groups, is there a mediation effect that is similar?

Material and methods

Participants

The current study is based on two previous studies in which participant recruitment and method are described in detail (Lindblom et al., 2017, 2018). The study involved voluntary participation and was approved by the regional Ethical Board in Uppsala (approval numbers 2012/075, and 2014/075). The inclusion criteria were to be 13–21 years old for the youth participants and 19 years or older for the adult participants, not currently abusing drugs and alcohol, and being in the early and pre-stages of their criminal career for the youths and the advanced or burn-out stages for the adults (as defined by Walters, 1992). The inclusion criteria were clear urine tests and completed self-report measures, including the Lifestyle Criminality Screening Form, an assessment of psychosocial history, the Psychological Inventory of Criminal Thinking Styles (PICTS), and an assessment of the phases of drug dependence (Bergström, 2004, 2006; Gorski & Miller, 1993). Only participants reporting a PICTS total score over 50 (the cutoff point for criminal thinking) were included. The exclusion criteria for the groups were environmental crime, traffic fines, financial crime involving companies, and sexual crimes. Individuals who attended the facilities for a defined period of time and met the inclusion criteria could participate.

In the youth multiweek treatment group, there were 17 participants and a further 14 in the control group, the majority of whom were boys. The treatment group received individual treatment for an average of 18 weeks. The youth treatment group was recruited at two care facilities and four social services. Out of from start ten randomly selected treatment units, two dropped out and eight remained, with six units providing participants. In the control group, nine units were recruited by purposive sampling. One was excluded due to a low number of clients. From the eight units, six provided participants for the youth control group; five peer associations and one social service facility. None of the participants dropped out during the pre- and post-measurements.

The adult multiweek treatment group comprised 32 participants, with an additional 11 in the control group, all of whom were male. The treatment group received treatment for an average of six weeks, including one week of cognitive group treatment, four weeks of individual cognitive treatment combined with a twelve-step treatment, and one week of cognitive group treatment. Six of the participants in the control group received no treatment at all, and five of them received a twelve-step treatment comparable to that of the treatment group (but no cognitive group and individual treatments). The recruitment of the adult treatment group took place at one care facility, which at the time was the only facility running the program in the setting of combined group and individual treatment. Out of 48 included participants, 5

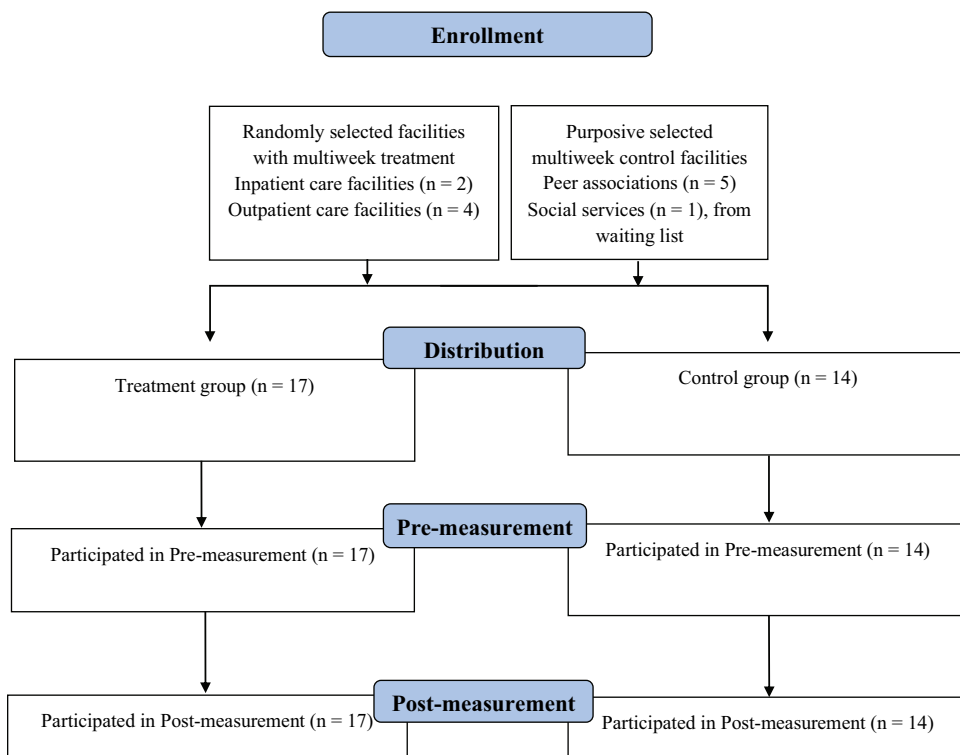


Figure 1. Flow chart of the recruitment of participants in the youth study.

dropped out before start without giving any reason and 11 were excluded one week after treatment start due to the fact that they had completed their planned care period at the treatment facility. Finally, a total of 32 participants were included in the treatment group. The participants in the control group were recruited from peer associations. Out of a total of 13 volunteer peer associations, 8 were randomly selected. One of the associations dropped out due to lack of personnel. From the 7 peer associations, 23 participants were included in the control group. From this distribution, 12 participants dropped out after pre-measurement. The reason was withdrawal for 11 of the participants and 1 was excluded due to missing answers. At post-measurement, there were 11 participants remaining in the control group (5 with 12-step treatment in outpatient care and 6 with no-treatment). (Figures 1–2 show the recruited participants. The participants' background data are described in Table 1.

Procedure

Initially, the program leaders of the treatment groups and the contact persons of the control groups were informed about the studies and consented to participate, see Figures 1 and 2. The program leaders and contact persons

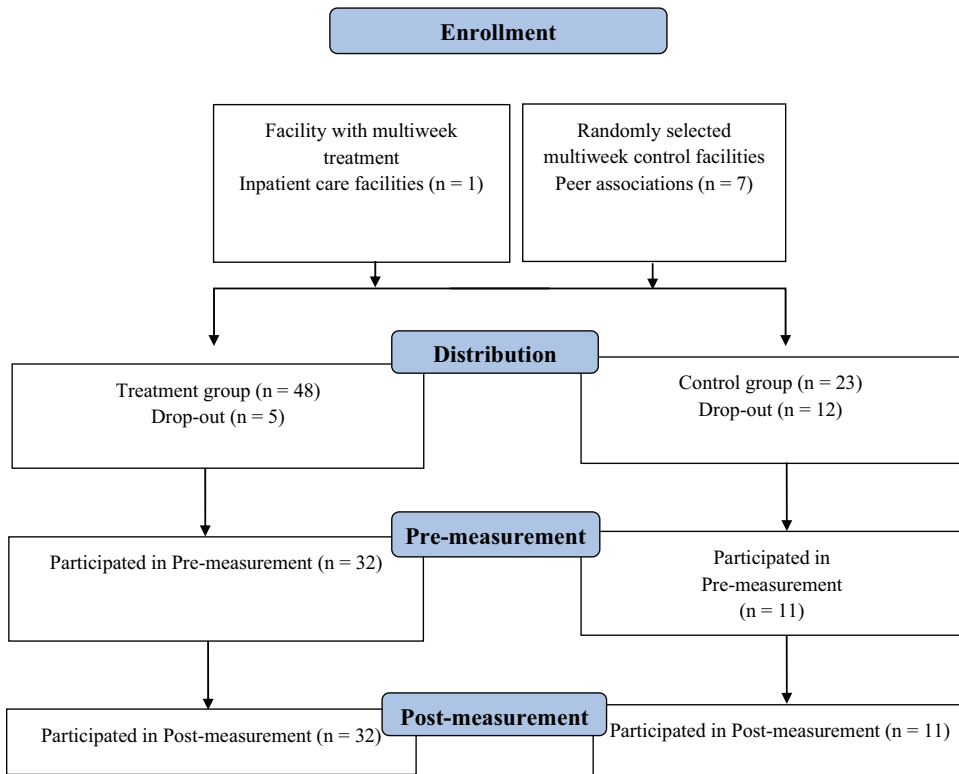


Figure 2. Flow chart of the recruitment of participants in the adult study.

then contacted youths and adults who met the inclusion criteria to participate. The inclusion criteria were determined verbally or in writing through Bergström's (2006) self-report instrument for youths and Bergström's (2004) self-report instrument for adults. Chemical addictions among the participants in the treatment groups were treated before starting the program. Also, the participants were informed about the studies in accordance with ethical principles and consented verbally and in writing to participate (guardian's consent if the youth was under 18 years of age). The participants of the treatment groups then answered the PICTS and SOC-13 questionnaires before and after the treatment. On the first occasion, they also filled out their demographic information. The same procedure was performed with the participants in the control groups.

Treatment

The youth treatment involved 13 mandatory sessions over 18 weeks, totaling 20 hours or 1.5 hours per session. The treatment for the youth offenders (A New Direction) applied a cognitive approach and components of family interventions. The adult treatment (New Challenge)

Table 1. Descriptive data on the therapy and study participants, $N = 74$.

Age group	Group	Men/ Women	Age (<i>Md</i>)	Therapy weeks (<i>Md</i>)	Number of individual therapy hours (<i>Md</i>)	Number of group therapy hours (<i>Md</i>)	Total number of therapy hours (<i>Md</i>)	Participants with current 12-step treatment	Participants with convicted before treatment	Total number of participants
Young	Treatment	15/2	17.8	18.0	20.0	-	20.0	-	11	17
	Control	13/1	18.0	18.0	-	-	-	-	6	14
Adult	Treatment	32/0	31.0	6.0	20.0	80.0	100.0	31	32	32
	Control	11/0	28.0	7.0	-	-	-	5	11	11

involved 15 mandatory sessions distributed over the first and sixth weeks. The adult treatment also involved one to four of these sessions during the individual treatment period of four weeks. In total, the adult program involved 100 hours distributed over an average of 17 sessions for six weeks, approximately six hours per session. The treatment for older adults applied a cognitive approach with existential components. The session themes were similar to those of the youth program. The program leaders who participated in the study had a basic education in social work at the upper secondary or post-secondary level and an eight-day education program. [Appendix 1](#) and [2](#) present additional information about the program sessions and their content, the criminogenic factors addressed in the sessions, and the psychological tools taught in the sessions.

Measurements

PICTS

The PICTS questionnaire was used for both the youths and adults (the juvenile version was used for the youths). The PICTS measures criminal thinking patterns and consists of 80 items on a four-level Likert scale. The scores show the values for eight thinking patterns, and the total value shows the general degree of criminal thinking (GCT). According to Walters (1992), criminal thinking patterns are defined as an integration of negative irrational thoughts (thought errors) and various types of denial and distortions of reality (pathological coping strategies), which can be described as follows: mollification (Mo), that is, finding explanations as excuses for crime; cutoff (Co), which has to do with thought strategies that block fear and sharpen focus; entitlement (En), that is, the self-image of being entitled to violate the rights of others and take what you want; power orientation (Po), that is, controlling others and the surroundings; sentimentality (Sn), that is, justifying one's crimes with good deeds; superoptimism (So), which concerns overestimating one's ability; cognitive indolence (Ci), which is about making the easiest choice in the moment and ignoring long-term consequences; and discontinuity (Ds), which implies thoughts jumping from one association to another, making it difficult for others to follow. In the two studies, the individual GCT and sub-scale scores were used in the statistical analyses. The lowest value was 32 and the highest 104. The cutoff point for criminal thinking was > 50. The test is a validated instrument with moderate to moderately high internal validity and reliability (Palmer & Hollin, 2004a; Walters, 2002). The GCT scale is the most reliable PICTS scale for predicting further criminal behavior (Walters, 2012).

SOC

The SOC-13 questionnaire was used to measure salutogenesis for both the youths and adults. The SOC-13 is an abbreviated version of the original 29-

item scale (SOC-29) and comprises 13 items on a seven-level Likert scale (Antonovsky, 1987). The instrument is useful for respondents from 13 years of age. The score shows the value of three factors (comprehension, manageability, and meaningfulness) and a total value for SOC. Meaningfulness (Me) means a sense of meaning regarding what occurs, which makes problems easier to master. Meaningfulness is the emotional and motivational aspect of SOC, which increases when the individual is actively involved in social situations. In the context of offender rehabilitation meaningfulness is about the client's willingness to change starting from their own prosocial goals. Comprehensibility (C) is about our ability to understand our situation and, to some extent, be able to predict what might happen. It is the cognitive aspect of SOC and is developed through predictable social interaction that makes the individual aware of the connections in social relationships. In the context of offender rehabilitation comprehensibility is about the client's understanding of how their motives and thinking patterns are linked and lead to criminal behavior. Manageability (Ma) is about having the right resources available to solve our problems. Manageability is dependent on comprehensibility, in that the individual needs to understand an event in order to act adequately. In the context of offender rehabilitation manageability is about the client being able to manage life both practically based on skills, as well as emotionally based on the ability to regulate emotions and locus of control (i.e., to what degree the individual is taking responsibility for the happenings he or she can control). Contrary to the pathological coping strategies of criminal thinking, Antonovsky (1987) describes the salutogenic perspective as an approach to life that leads to functional coping strategies. The individual total SOC scores and factor scores were used in the statistical analyses. The lowest total SOC value was 13, and the highest was 91. The Swedish translation of the SOC-13 has shown good internal consistency, close to the high internal consistency of the Swedish translation of the SOC-29. Cronbach's α was .89 for the SOC-13 and .93 for the SOC-29 (Olsson et al., 2009).

Data analysis

A two-way mixed ANOVA ("split plot") was used to analyze changes in criminal thinking patterns (PICTS) and SOC, respectively, with a post hoc analysis using the Tukey HSD test for the youths and the Bonferroni test for the adults. The SPSS mediator syntax was used to analyze whether increases in SOC and SOC factors mediated a decrease in criminal thinking (see results for more details). All statistical analyses were performed with the alpha level set to .05. The change score correlations were calculated for PITS and SOC. The correlations were defined as $r > 0.50$ strong, $0.50 > r > 0.30$ moderate, and $r < 0.30$ weak (Koposov et al. 2003). Effect sizes (ESs) were reported using Cohen's d . The corrected between-group ES was calculated by dividing the mean

difference in the change between the intervention and control groups by the pooled standard deviation of the pre-measurement. To interpret Cohen's between-group d , an ES of 0.20 was considered small, equal to or above 0.50 moderate, and equal to or above 0.80 large (Cohen, 1988).

Results

Changes in criminal thinking

We observed significant interaction effects among both the youth and adult offenders regarding most of the criminal thinking patterns (PICTS, Table 2), suggesting that criminal thinking decreased significantly more in the treatment groups compared to the control conditions. Only sentimentality (PICTS) and superoptimism (PICTS) among the youth offenders showed no significant difference compared to the control groups. The between-group ESs showed large differences ($d > 0.80$) between the treatment and control groups among both the youth and adult participants.

Changes in the sense of coherence

Among both the youths and adults, there was a significant interaction effect regarding total SOC and the factors of meaningfulness and manageability. This suggests that SOC increased significantly more in the treatment groups compared to the control conditions, except in relation to comprehensibility. The between-group ESs showed moderate differences ($d > 0.50$) between the treatment and control groups among the youth participants regarding total SOC, large differences ($d > 0.80$) regarding meaningfulness, and small differences ($d < 0.20$) regarding manageability. The between-group ESs showed large differences ($d > 0.80$) between the treatment and control groups among the adult participants regarding total SOC and manageability and close to a large difference in terms of meaningfulness (See Table 3).

Mediation effects

We first performed correlations between changes in criminal thinking (PICTS) and changes in the potential mediator (SOC). A Pearson correlation analysis showed no significant correlations between the change scores for SOC, including SOC factors, and between the change scores for PICTS, including PICTS sub-scales, for the youth treatment group. Thus, changes in PICTS were not significantly associated with changes in SOC. However, for the adult treatment group, there was significant change – score correlations among all the sub-scales of PICTS, except superoptimism and the SOC total score. Further, among the adults, the changes in the PICTS total score

Table 2. Criminal thinking patterns (PICTS) with total and sub-scale scores (mean values and standard deviations) for youth and adults before and after the intervention.

Measure	Age group	Group	Pre m (sd)	Post m (sd)	F (df = 1,29) ^y (df = 1,41) ^a p – value	Effect size (d)
PICTS Total	Young	Treatment	63.47 (8.40)	49.64 (9.58)	16.08 <.001***	1.69
		Control	66.36 (9.00)	67.21 (11.36)		
	Adults	Treatment	78.56 (7.55)	54.97 (11.44)	16.69 <.001***	2.48
		Control	71.46 (7.89)	67.00 (13.81)		
PICTS Mollification	Young	Treatment	61.06 (9.33)	47.00 (7.89)	16.83 <.001***	1.43
		Control	62.64 (1.68)	62.93 (9.47)		
	Adults	Treatment	77.97 (7.81)	56.94 (1.90)	15.14 <.001***	2.34
		Control	67.18 (8.72)	65.45 (16.38)		
PICTS Cut-off	Young	Treatment	62.94 (8.55)	49.41 (8.91)	17.27 <.001***	1.62
		Control	64.79 (9.69)	66.00 (7.53)		
	Adults	Treatment	71.75 (7.48)	53.56 (9.82)	14.63 <.001***	1.57
		Control	64.73 (11.11)	61.09 (15.42)		
PICTS Entitlement	Young	Treatment	62.91 (9.02)	42.12 (5.83)	18.60 <.001***	2.56
		Control	56.79 (9.99)	6.29 (14.16)		
	Adults	Treatment	77.00 (1.15)	54.75 (11.20)	18.05 <.001***	1.71
		Control	63.82 (11.05)	59.73 (12.71)		
PICTS Power orientation	Young	Treatment	58.94 (12.25)	46.41 (6.62)	12.74 .001**	1.37
		Control	64.50 (9.76)	67.07 (11.77)		
	Adults	Treatment	75.59 (15.26)	56.88 (13.24)	8.83 .003**	1.11
		Control	72.09 (11.46)	68.27 (15.63)		
PICTS Sentimentality	Young	Treatment	55.47 (9.25)	51.83 (4.80)	1.71 .202	0.50
		Control	52.93 (1.34)	54.14 (1.72)		
	Adults	Treatment	6.78 (8.45)	46.91 (1.94)	7.64 .005**	1.18
		Control	57.36 (9.91)	54.36 (9.92)		
PICTS Super optimism	Young	Treatment	59.24 (7.21)	54.53 (1.90)	1.20 .141	0.50
		Control	58.36 (12.25)	58.50 (13.36)		
	Adults	Treatment	71.63 (12.91)	56.34 (11.15)	3.94 .027**	0.87
		Control	71.36 (7.88)	65.09 (9.79)		
PICTS Cognitive indolence	Young	Treatment	61.76 (7.71)	5.65 (9.87)	1.99 .001**	1.56
		Control	63.57 (6.89)	63.86 (8.72)		
	Adults	Treatment	68.88 (7.53)	5.06 (8.97)	16.60 <.001***	1.85

(Continued)

Table 2. (Continued).

Measure	Age group	Group	Pre m (sd)	Post m (sd)	F (df = 1,29) ^y (df = 1,41) ^a p – value	Effect size (d)
PICTS Discontinuity	Young	Control	62.91 (8.12)	58.55 (11.03)	9.42 .003**	1.15
		Treatment	61.65 (7.72)	5.71 (11.44)		
	Adults	Control	63.79 (1.97)	63.57 (9.39)	13.02 .001**	1.35
		Treatment	66.63 (9.55)	52.50 (9.23)		
		Control	68.18 (11.08)	68.00 (14.83)		

F- and p-values and between-group effect sizes at post-intervention are also reported.

^aPre- and post- and F and p values for PICTS Total have been reported in Lindblom et al (2017, 2018).

p < .01, *p < .001.

Table 3. Sense of coherence, with before and after total scores and factor scores for each group.

Measure	Age group	Group	Pre m (sd)	Post m (sd)	F (df = 1,29) ^y (df = 1,41) ^a p – value	Effect size (d)
SOC Total	Young	Treatment	54.53 (12.68)	61.82 (1.10)	3.37 .039*	0.70
		Control	47.50 (1.57)	46.71 (6.83)		
	Adults	Treatment	43.48 (8.71)	55.71 (1.08)	6.13 .019*	1.26
		Control	5.09 (9.20)	51.00 (15.08)		
SOC Meaningfulness	Young	Treatment	17.53 (4.35)	21.00 (5.07)	4.08 .027*	0.82
		Control	15.86 (3.98)	15.93 (2.46)		
	Adults	Treatment	15.71 (4.29)	18.42 (3.36)	4.81 .017*	0.77
		Control	17.82 (2.99)	17.73 (4.67)		
SOC Comprehensibility	Young	Treatment	20.53 (6.47)	21.65 (5.06)	.332 .285	0.14
		Control	18.21 (4.63)	18.57 (4.54)		
	Adults	Treatment	15.83 (4.40)	2.61 (4.48)	.714 .202	0.42
		Control	17.46 (5.87)	2.09 (7.80)		
SOC Manageability	Young	Treatment	18.00 (9.25)	18.12 (3.64)	5.44 .014*	0.18
		Control	13.21 (3.47)	12.21 (3.36)		
	Adult	Treatment	11.94 (3.91)	16.68 (3.92)	7.31 .005*	1.83
		Control	14.82 (2.86)	14.09 (5.50)		

F- and p-values and between-group effect sizes at post-measurement are also reported (comparison of difference of pre- and post-measurements between the treatment and control).

^aPre- and post- and F and p values for SOC Total have been reported in Lindblom et al (2017, 2018).

*p < .05.

Table 4. Correlations between change scores for SOC, including SOC factors, and change scores for PICTS, including PICTS sub-scales, for the treatment groups ($n = 49$).

Dependent variable	Group	SOC	Me	C	Ma
PICTS	Young	-0.22	-0.32	-0.11	-0.09
	Adult	-0.53**	-0.26	-0.44*	-0.51**
Mo	Young	-0.08	-0.02	-0.05	-0.06
	Adult	-0.54**	-0.22	-0.43*	-0.58**
Co	Young	-0.26	-0.38	-0.09	-0.17
	Adult	-0.54**	-0.37*	-0.43*	-0.46**
En	Young	-0.03	-0.25	0.17	-0.06
	Adult	-0.37*	-0.09	-0.29	-0.44*
Po	Young	-0.09	-0.26	-0.09	0.12
	Adult	-0.37*	-0.24	-0.17	-0.49**
Sn	Young	0.19	0.08	0.31	0.04
	Adult	-0.43*	-0.07	-0.45*	-0.38*
So	Young	-0.06	-0.17	-0.93	-0.00
	Adult	-0.32	-0.23	-0.16	-0.38*
Ci	Young	-0.42	-0.21	-0.45	-0.28
	Adult	-0.58**	-0.31	-0.53**	-0.48**
Ds	Young	-0.25	-0.08	-0.22	-0.24
	Adult	-0.40*	-0.24	-0.36*	-0.31

Total criminal thinking patterns (PICTS), mollification (Mo), cutoff (Co), entitlement (En), power orientation (Po), sentimentality (Sn), superoptimism (So), cognitive indulgence (Ci), discontinuity (Ds).

Total sense of coherence (SOC), meaningfulness (Me), comprehensibility (C), manageability (Ma).

* $p < .05$.

** $p < .01$.

correlated significantly with changes in the SOC sub-scales of comprehensibility and manageability. Also, changes in the SOC sub-scales of comprehensibility (C) and manageability (Ma) correlated highly ($r > 0.50$) or moderately ($0.50 > r > 0.30$) with changes in most of the PICTS sub-scales. Thus, larger increases in SOC were associated with larger decreases in criminal thinking (see Table 4).

An SPSS mediator analyses showed that, for the youth participants, the decrease in PICTS (total) was not mediated by an increase in SOC or any of the sub-factors. However, for the adults (Table 5), a decrease in PICTS was mediated by an increase in the SOC total scores (with a 31.50% mediator effect); more precisely, an increase in the SOC sub-factor manageability mediated a decrease in PICTS (with a 32.18% mediator effect). No other mediators were found.

Discussion

The results showed that the cognitive programs A new direction and New challenges produced positive changes in total criminal thinking and all the sub-scales except sentimentality and superoptimism among the youth. We also observed positive changes in total criminal thinking and all the sub-scales among the adult participants. Several studies have sought to identify which sub-scales of criminal thinking (PICTS scales) are predictors of future behavior (Dina et al., 2022). However, the results have varied by

Table 5. Mediator analyses.

Mediator	Age group	IV to mediators (a-paths) <i>Estimate p</i>	Direct effects of mediators (b-paths) <i>Estimate p</i>	Direct effects of IV on DV (c'-paths) <i>Estimate p</i>	Indirect effects (a x b -paths) Bias Corrected Confidence Intervals		Mediators effect
					Upper	Lower	
SOC	Young	-0.6374 0.0769	-0.1995 0.2103	1.0534 0.0019**	-0.0162	0.4029	-
	Adult	-0.8189 0.0177*	-0.4577 0.0009**	0.8344 0.0057**	0.0708	0.9441	31.50%
Me	Young	-0.6945 0.0526	-0.2140 0.1831	1.0320 0.0024**	-0.0109	0.5204	-
	Adult	-0.7364 0.0341*	-0.1823 0.2051	1.0750 0.0016**	-0.0261	0.5299	-
C	Young	-0.2102 0.5691	-0.1147 0.4534	1.1565 0.0006**	-0.0453	0.2631	-
	Adult	-0.4550 0.1985	-0.3927 0.0031**	1.0306 0.0007**	-0.0488	0.5737	-
Ma	Young	-0.7853 0.0269*	-0.1567 0.3431	1.0575 0.0027**	-0.1845	0.5785	-
	Adult	-0.8836 0.0100*	-0.4481 0.0014**	0.8134 0.0082**	0.1046	1.0432	32.18%

Significant mediators are indicated by significant indirect a x b – paths (95% confidence intervals, not including zero). IV to mediators (a-paths) represent the impact of the treatment on SOC. The direct effects of mediators (b-paths) represent the extent to which the mediator (change in SOC) affects changes in PICTS. The direct effects of IV on DV (c'-paths) represent the partial effect of treatment on PICTS, adjusted for the effects of the mediator. Total sense of coherence (SOC), meaningfulness (Me), comprehensibility (C), manageability (Ma). Total criminal thinking patterns (PICTS).

**p* < .05.
** *p* < .01.

population. For example, among male offenders in North America, only the cutoff scale showed a relationship with future reoffending, which was of marginal significance (Walters, 1997). In contrast, Walters and Elliott (1999) found a moderate relationship between the sentimentality scale and reoffending among female offenders but not among male offenders. Using a sample of English young male prisoners, Palmer and Hollin (2004b) reported a moderate relationship between the superoptimism scale and reconviction. The results of our study showed that, during the treatment, this scale did not decrease among the youth, suggesting that unrealistic thinking persisted, thereby posing a risk of future reoffending. Nevertheless, previous studies have shown that it is primarily the total PICT scale that predicts recidivism (Walters & Lowenkamp, 2016). Regarding SOC, there were a significantly change in total SOC, meaningfulness and manageability for both youths and adults in the treatment groups compared to the controls. For the adults, however, the intervention had a significant greater impact on these factors compared to the control group. The between-group ESs showed large differences (*d* > 0.80) between the treatment and control group regarding total SOC and manageability. Thus, the treatment programs did have a significant impact on all aspects of SOC except comprehensibility among both youths and adults.

Regarding the results related to the second research question of whether changes in criminal thinking were mediated by changes in SOC, no mediations effect was found for the youths. But for the adults, the decrease in total criminal thinking was mediated by the increase in total SOC. In particular, the increase in the manageability factor mediated the decrease in the total score for criminal thinking. There could be several reasons why changes in adults criminal thinking were mediated by changes in SOC while no mediation effect was observed for the youth. One could be the small sample size, especially among the youth group. Second, the treatment for adults involved more hours compared to the youth treatment (100 hours vs. 20 hours). This difference could indicate that although the treatment of younger offenders had a positive impact on criminal thinking, it did not significantly increase their SOC (the protective health and well-being factor), raising the possibility that more intensive training might be needed. Furthermore, it is possible that different mechanisms could explain changes in criminal thinking among younger and older criminals. According to Konaszewski and Niesiobędzka (2021), a high SOC among juveniles could lead to maladaptive coping by turning to substitute activities. Thus, ego-resiliency may increase criminal activity among juveniles instead of being a protective factor. Nevertheless, low SOC values have been shown to correlate with high levels of crime among juveniles (Ristkari et al., 2009). In clinical work, this could suggest that the aim of preventive and clinical interventions should be to increase SOC if it is low but not if it is within the normal range. Another factor is whether the items measuring the manageability factor in the SOC scale have different levels of significance for the youths and adults. This factor is supposed to measure the individual's experience of having the resources and strategies to deal with different situations and events in a constructive way. However, this could have a different meaning for youths and adults. Youths are dependent on support and guidance from adults, while adults have experiences that can contribute to greater coping skills. This difference could be reflected in the results.

Another possible reason for the difference in the mediation effect between the youth and adult participants could be the difference in treatment programs. Unlike the youth program, the adult program comprised skills training, thereby raising the question of whether the youth program would have yielded a greater effect if skills training sessions had been incorporated. Another question is whether the combined twelve-step treatment affected the manageability factor among the adults. According to Antonovsky (1987), manageability is about having the right resources available to solve our problems. For our target group, manageability can be obtained by having the basic needs met in a prosocial way to be able to function in society, as suggested by the Good lives model (GLM; Ward & Brown, 2004). The GLM is grounded in the ethical concept of human dignity and universal human rights and places a strong emphasis on human agency. Thus, it is concerned with individuals' ability to

formulate goals and plans and to act freely in implementing them. To do this, however, you have to know how, including knowhow related to practical everyday things such as how to make non-criminal friends, how to get help with debt relief, how to apply for and complete an education or get and keep a job and declare your income, how to take care of your home, and so on. Since the adult group also received a twelve-step treatment, unlike the youth group, the question is whether these skills were learned by socializing in the twelve-step groups with people in the same life situation who have come further in terms of being part of society. Further research is needed to examine this question as well as the process factors that mediated positive effects in the youth program.

Critical discussion of the results

When making conclusions of the results, one possible problem that can affect the internal and external validity of the studies, is the small sample sizes. Therefore, due to the low number of participants, the results should be interpreted with caution. Also, the large effect sizes may partly be a result of the small sample sizes, since previous research shows small to medium-sized average effects (Beaudry et al., 2021; Granski et al., 2019). Another issue for discussion is representativeness, which includes for whom the results are valid regarding age and ethnical background. In the youth study, 95% of participants were boys with a mean age of 17 years. The ethnic background of the participants was 72% Nordic. In the adult study 100% were men with an average age of 29 years. The ethnic background of the participants was 86% Nordic. Thus, the results are valid when providing the youth program as individual treatment for Nordic boys with an average age of 17 years in the pre-criminal and early phase of criminality, according to Walters (1992) definition. Also, the results are valid when providing the 6-week combined group and individual treatment for Nordic men with an average age of 29 years who are in the advanced and burned-out phases of criminality.

Ethical discussion

An issue for ethical discussion is the use of control groups with young offenders. It is a dilemma that a control group does not have access to interventions, particularly when it comes to young people. For the youth study most of the control participants were recruited from the peer associations. These associations offer support to those who seek to change their criminal behavior or lifestyle. The contact persons at these associations support prosocial activities and try to motivate and help individuals obtain access to interventions. In this context, participating in the study served as a step in the motivation process. Hopefully, answering the questionnaires may have increased the participants' awareness of how criminal thinking patterns hinder a prosocial life.

Another ethical dilemma is the risk of identification when comparing young people with adolescence-limited antisocial behavior to life-course-persistent adult offenders. Research shows that an individual identifies with a criminal identity if influential people in the environment treat the individual as though they fit the stereotypical image of “a criminal,” and if the individual’s criminal identity is considered to have a higher social status than their previous identity (Skardhamar, 2010). Therefore, it becomes difficult for individuals to stop practice antisocial behavior because of the identification that becomes a part of their self-image as well as societal stigmatization. Thus, if young people with adolescence-limited antisocial behavior are mixed with or compared to life-course-persistent offenders, there is a risk that they will associate themselves with a criminal identity. To prevent this to happen the participants in this study were asked to fill in the questionnaires that measured their criminal thinking individually, under the supervision of the contact persons and program leaders, who then explained and discussed the results with them.

Key findings and clinical implications

To sum up, the purpose with the present study was to increase our knowledge of the key processes of change responsible for treatment effects, whether there are differences between young and adult offenders regarding these aspects and how this knowledge could improve treatment. The results provide evidence of decreased criminal thinking in most sub-scales among younger offenders and in all sub-scales for adult offenders after the interventions. The interventions also increased total sense of coherence and the sub-factors meaningfulness and manageability among both young and adult offenders. But only among the adults did changes in total sense of coherence and the sub-factor manageability mediate the decrease of criminal thinking. The results are helpful in clinical work as they suggest that interventions should aim to increase a low sense of coherence both among young and adult offenders. But for youths who are dependent on support and guidance from adults to form and develop a solid sense of coherence, this should be the aim. Especially, the sub-factor manageability seems to be important. Manageability measure the ability to regulate emotions and locus of control (i.e., to what degree the individual is taking responsibility for the happenings he or she can control). However, further research is needed to find out what mechanisms enable the clients to regulate emotions and change the locus of control that increases manageability. Self-compassion training with mindfulness meditation, and compassion training in role-play that enhances the change from an egocentric perspective to an altruistic approach, may be such mechanisms (R. H. Morley, 2017; Weng et al., 2013).

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Appendix 1.

Table A1. Description of the youth program a new direction.

Program sessions	Session content	Criminogenic factors* addressed in the session	Psychological tools taught in the session
1) How's it going?	-Information about the program -The youth's description of his crimes and the perception of crime in the family -The result of the URICA test	-Awareness of the youth's criminality and the family members' view of the youth's criminality	-Psychoeducation -Communication
2) Change and to change		-Awareness of degree of motivation -Antisocial cognitions Antisocial personality pattern	-Psychoeducation
3) What do I want for my life?	-Pros and cons of crime -Goal formulations	-Motivation -Antisocial cognitions -Antisocial personality pattern	-Pros and cons analysis -Valued direction
4) The family as a group**	-Different perceptions in the family -Communication exercises	-Communication -Awareness and motivation of the parents -Parenting function -Awareness -Antisocial cognitions	-Observe and describe feelings -Communication -Psychoeducation
6) The criminal career	-Information about the criminal development process	-Antisocial personality pattern	
13-15) Criminal thinking patterns	-Information about criminal thinking patterns -Consequences of thought and behavioral patterns -Alternative thoughts and their influence on behavior	-Awareness -Problem-solving -Antisocial cognitions -Norm-breaking behavior	-Psychoeducation -Identification of thinking patterns -Behavior analysis
16) To set goals	-Goal prioritization -How crime hinders goal fulfillment	-Awareness -Motivation -Problem-solving	-Valued direction
23) What makes someone continue to commit crimes?	-Driving forces, own choices and responsibilities and how this affects the problem behavior	-Awareness -Antisocial personality pattern	-Psychoeducation -Identification of driving forces
26) Who suffers from crime? A) Victims of crime	-Consequences of crime for the victim, victim's family and friends and society -The victim's feelings	-Awareness -Antisocial cognition -Antisocial personality pattern	-Psychoeducation -Analysis of consequences -Observe and describe feelings

(Continued)

Table A1. (Continued).

Program sessions	Session content	Criminogenic factors* addressed in the session	Psychological tools taught in the session
27) Consequences of crime B) Your own consequences	-Consequences of crime for the program participant -The participant's feelings -Consequences of crime for relatives	-Awareness -Antisocial personality pattern	-Psychoeducation -Analysis of consequences -Observe and describe feelings
28) Who suffers from crime – the relatives	-Relatives' feelings -Risk factors for recidivism	-Awareness -Antisocial personality pattern -Antisocial cognitions	-Analysis of consequences -Observe and describe feelings
30) Leaving crime – Ending of the program	-Maintenance plan	-Antisocial personality pattern -Norm-breaking behavior	-Maintenance plan: summary of risk situations and what tools the participant can use in these situations

*Criminogenic factors are the conditions in or around the individual that research has shown to be changeable and are considered central in the treatment focus in order to reduce recidivism (Andershed & Andershed, 2005). For youths, these factors are awareness and motivation, antisocial personality pattern, antisocial cognitions, rule-breaking behavior, linguistic ability and communication, problem-solving, parents' awareness and motivation, parental function, antisocial associates/peer influence, school affiliation, depression or self-harming behavior, and alcohol and drug use.

**The session is implemented if the parents participate in the program.

Appendix 2.

Table A2. Description of the adult program new challenges.

Program sessions	Session content	Criminogenic factors* addressed in the sessions	Psychological tools taught in the sessions
2) Change and to change	-The result of the URICA test	-Antisocial cognitions	-Psychoeducation
3-4) What do I want for my life?	-Pros and cons of crime	-Antisocial personality pattern	-Pros and cons analysis
6) The criminal career	-Goal formulations	-Antisocial cognitions	-Valued direction
	-Information about the criminal development process	-Antisocial personality pattern	-Psychoeducation
10) To stop taking drugs and commit crimes II	-Risk situations for crime and drug use	-Substance abuse	-Behavioral analysis
		-Antisocial cognitions	
11) Driving forces	-Information about driving forces	-Antisocial personality pattern	-Psychoeducation
	-Identification of the client's own driving forces	-Antisocial personality pattern	-Identification of driving forces
13) Who are you?	-The client's view of himself, others, and society.	-Antisocial cognitions	-Identification of amplifiers and extinguishers of criminal behavior
16) Thoughts, feelings, and behaviors	-The relationship between thoughts, feelings, and actions	-Antisocial personality pattern	-Psychoeducation
17-18) Criminal thinking patterns	-Information about criminal thinking patterns and questions regarding recognition of criminal thinking patterns	-Antisocial cognitions	-Functional analysis
19) Thinking patterns – Test and exercise	-Test results and discussion about recognition of criminal thinking patterns	-Antisocial personality pattern	-Psychoeducation
23) Hope and faith	-The participant's prosocial values	-Antisocial cognitions	-Identification of thinking patterns
	-Amplifiers and extinguishers of the problem behavior	-Antisocial cognitions	-Identification of thinking patterns
24) Goals and meaning – My values	-Differences between prosocial and antisocial values	-Antisocial cognitions	-Valued direction
25) Tactics to avoid responsibility	-Information about problem behavior	-Antisocial personality pattern	-Observe and describe emotions
	-Identification and pros and cons of the participant's problem behaviors	-Antisocial cognitions	-Identification of prosocial values
29) Criminal thinking patterns III	-Identification of previous and current criminal thinking patterns	-Antisocial cognitions	-Identification of amplifiers and extinguishers of the problem behavior
			-Psychoeducation
			-Identify of antisocial values
			-Psychoeducation
			-Identification of problem behavior
			-Pros and cons analysis
			-Mapping of progress by identifying previous and current cognitions

(Continued)

Table A2. (Continued).

Program sessions	Session content	Criminogenic factors* addressed in the sessions	Psychological tools taught in the sessions
32) Who suffers from crime?	-Consequences of crime for the participants, family and friends, victims, family and friends, and society -Guilt as a sign of salubrity	-Antisocial cognitions -Antisocial personality pattern	-Psychoeducation -Analysis of consequences
50) Leaving crime – Ending of the program	-Risk factors for recidivism -Maintenance plan	-Antisocial cognitions -Antisocial personality pattern -Antisocial behavior	- Maintenance plan: summary of risk situations and what tools the participant can use in these situations

*For adults, following criminogenic risk factors is important to change in order to reduce recidivism: substance use, antisocial cognition, antisocial associates, criminal and/or non-caring and non-monitoring of family and marital relations, low employment performance and satisfaction, and low involvement and satisfaction in leisure and recreational activities (Andrews et al., 2006; Bonta & Andrews, 2016). Reduced association with criminal family members also improves work performance and decreases alcohol use, leading to a greater reduction in offending (Wooditch et al., 2014).