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Emotional distress and sense of coherence in women completing a motivational program in five countries. A prospective study

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Abstract

Purpose – *The purpose of this paper is to investigate changes in, and associations between, sense of coherence (SOC) and emotional distress in women who participated in an accredited motivational program (VINN) in correctional institutions in five countries.*

Design/methodology/approach – *A prospective study with a pre- and post-test design included 316 participants from Sweden, Estonia, Denmark, Russia and Norway. Global emotional distress was measured by the Hospital Anxiety and Depression Scale. SOC was measured using the 13-item Orientation to Life Questionnaire. One-way analysis of variance and multilevel regression models were used in the statistical analyses.*

Findings – *An increase in SOC was associated with a decrease in emotional distress. Emotional distress decreased significantly –3.80 points (95 percent CI (–4.61, –2.97)), and SOC significantly improved from pre- to post-measurement by 1.82 points (95 percent CI (0.72, 2.92)), regardless of country and correctional institution.*

Practical implications – *The results add new knowledge regarding a coherent theoretical foundation of a motivational program for women. The ability of a program promoting health is important for researchers, health-care workers and facilitators delivering programs for women in correctional facilities. An increase in SOC can act as a protective factor in order to manage stressors and risk factors among women serving in correctional facilities.*

Originality/value – *The present study indicates that enhancing women's coping resources and providing income alternatives to crime is fundamental to their capacity to desist from criminal behavior.*

Keywords *Rehabilitation, Accredited program, Health promotion, Sense of coherence, Motivational interviewing, Women prisoners and probationers, Women's health*

Paper type *Research paper*

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Introduction

There is a call for research on programs in the criminal justice system that have successful impact on women's mental health needs (Bartlett *et al.*, 2014; Martin *et al.*, 2009; Van Wormer, 2010), and examinations on interventions designed around a coherent theoretical approach (Bartlett *et al.*, 2014). No previous research have covered accredited programs within a theoretical framework based on Antonovsky's (1987) global concept of sense of coherence (SOC), or combined it with the collaborative conversation style of motivational interviewing

(Miller and Rollnick, 2013) to strengthen women's coping abilities, motivation and commitment to change. The purpose of the current study is to investigate whether participation in a program with such an approach improves women's SOC and emotional distress.

Women's psychosocial problems and needs are well documented in the correctional literature from Scandinavia (Amundsen, 2011; Cramer, 2014; Lindberg, 2005; Mathiassen, 2011; Yourstone *et al.*, 2010), and other countries in Europe and outside Europe (Bartlett *et al.*, 2014; Black *et al.*, 2013; Chen, 2010; Covington, 2008; Leschied, 2011; Sacks *et al.*, 2012; Sapouna *et al.*, 2011; Zaplin, 2008; Zlotnick *et al.*, 2008, 2009; Van Wormer, 2010). Recently, a Norwegian study demonstrated that one out of four women reported major or moderate depression (Cramer, 2014). This is in line with a study in Sweden, where approximately one-fifth of sentenced women met the criteria for current depression (Yourstone *et al.*, 2010). A Norwegian study reported that 42 percent of the women serving had experienced sexual abuse (Amundsen, 2011). Histories of substance abuse, psychiatric challenges and marginalization, such as social isolation, low socio-economic status together with lack of a supportive environment, have a negative influence on their mental health status (Leschied, 2011; Najavits *et al.*, 2007). This comorbid pattern of substance abuse and psychiatric disorders seems to increase the likelihood of recidivism (Smith and Trimboli, 2010). The total recidivism rate for women in the Nordic countries varies from 10 percent (Norway) to 25 percent (Sweden) (Kristoffersen, 2013). This complexity of the situation for a large proportion of the women warrants tailored gender-responsive programs intended to facilitate their recovery.

Studies on women's programs in the criminal justice system have addressed specific individual factors such as substance abuse (Zlotnick *et al.*, 2009; Najavits *et al.*, 2007), traumas (Covington, 2003; Miller and Najavits, 2012), self-efficacy (Pelissier and Jones, 2006) and measured recidivism (Andrews *et al.*, 2012; Grella and Rodriguez, 2011). Two systematic reviews identifying interventions tailored for women were published in 2014. Blaasvær and Johansen (2014) explored the experiences of rehabilitation and interventions for women. The review showed that participating in a program could improve coping abilities, and possibly decrease depressive symptoms. Bartlett *et al.* (2014) reviewed the interventions in more detail, and found that few interventions resulted in a positive mental health outcome for the women, and that future work must incorporate a gendered understanding of the women's needs, justify the relevance of the outcomes measured and more robust investigations (Bartlett *et al.*, 2014).

Various theoretical frameworks have been employed in the past 30-40 years in correctional services. The most prevalent and robust programs have been founded on cognitive behavioral therapy (CBT) (e.g. Andrews *et al.*, 2012; Black *et al.*, 2013). An example is Linehan's dialectical behavior therapy (DBT) (Carr *et al.*, 2011; McCann *et al.*, 2007), a structured, comprehensive (CBT) program, reporting positive effects on interpersonal functioning and anxiety.

Searches of databases, journals and references (SwetsWise, ISI Web of Knowledge, Google Scholar and PubMed) did not identify any accredited program or intervention designed specifically for women based on a health promotion approach (Antonovsky, 1987).

Antonovsky is well known for his theory about health promotion, including the main concept SOC with its particular combination of cognitive, behavioral and motivational aspects (Antonovsky, 1987). He studied women who had overcome exceptionally punishing experiences in concentration camps during Second World War, and revealed that some of these women had a high level of health (Antonovsky, 1987). Through this research, he identified three main factors that contributed to active adaptation and SOC among the women he studied: the ability to find meaning in a situation; the ability to understand what is happening around them; and the ability to manage the situation by using their own resources or those available in their network (Eriksson and Lindström, 2005).

His main findings were that these women were characterized by a strong SOC, and he concluded that this might have an important protective role as a coping resource. Antonovsky postulated that this was because of how they viewed and expressed the essence of existence and their lives (Eriksson and Lindström, 2005). These women were able to utilize their internal and limited external resources in a healthy and flexible way. Antonovsky constructed the Orientation to

Life Questionnaire (as used in the current study) based on interviews with these women (Antonovsky, 1987, 1993).

The “VINN” program is founded on Antonovsky’s theory, and the objectives of the program are to increase the women’s SOC, promote coping, improve quality of life, ease tension and to enhance confidence in desisting from crime (Højdaahl *et al.*, 2013; Højdaahl *et al.*, 2014). The word “VINN” means “win” in Norwegian; in a referred meaning by increased personal awareness and enhanced coping strategies. The program therefore focusses on factors that support a meaningful life, human health and well-being, and on the relationship between health promotion, stress and coping with demands (Antonovsky, 1987), rather than on deficit and disease. An earlier Norwegian intervention grounded in Antonovsky’s (1987) health promoting principles among non-incarcerated persons with mental health problems, demonstrated a significant improvement in SOC (Langeland *et al.*, 2006).

The aims of the current study were to investigate emotional distress and SOC in women when entering the “VINN” program, and to examine if there were changes and associations in emotional distress and SOC before and after participation in the program. We also wanted to explore whether changes were associated with demographics, correctional variables, characteristics related to the country or the correctional institution, the “VINN” – group they participated in, or at the individual (participant) level.

Methods

The “VINN” program

The “VINN” program (e.g. Højdaahl and Størksen, 2009) was accredited according to evidence-based criteria (Maguire *et al.*, 2010) in Norway in 2009 and in Sweden in 2010. The program is described in detail elsewhere (see Højdaahl and Størksen, 2009, 2011; Højdaahl *et al.*, 2013, 2014). Briefly, two facilitators and four to eight women meet for up to 15 three-hour sessions over six to 12 weeks. Combined with homework exercises, relaxation exercises and group work, the women are encouraged to identify something meaningful that they can engage with in their personal lives while serving, and would like to do after serving their sentences. In the groups, each woman’s personal motivation for and commitment to change behavior is purposefully stimulated, within an atmosphere of acceptance and compassion (Bandura, 1997; Miller and Rollnick, 2013; Antonovsky, 1987; Yalom and Leszcz, 2005).

Groups were chosen because of the women’s need for belonging (e.g. Chen, 2010; Van Wormer, 2010) and because being a member of a group can lead to positive changes for the participants (Yalom and Leszcz, 2005). Examples of what the women discuss in “VINN” groups are how to cope with substance abuse, economic issues and future income, anger, violence, unhealthy lifestyles and how to improve their personal relationships. The members learn through group discussions how to accept, live with and cope with their pain, crime, loss and trauma.

Study design and population

This prospective study used a pre- /post-test design. To be included in a “VINN” group and in the study, participants had to be serving a sentence in a prison or be under the supervision of the probation service at an institution that offered a “VINN” program in Sweden, Norway, Denmark, Russia or Estonia. Women voluntarily applied to participate in the program, and participation both in the program and in the current study was voluntarily. From November 2011 to May 2013, 85 “VINN” groups were conducted with 534 participants. According to the numbers reported by the facilitators, 432 (81 percent) of the participants completed the program. Personal issues, pre-release or transfer to another unit were the three most common reasons given for not completing the program. The data were collected by staff members in 32 correctional institutions in five countries, who followed the same protocol when administering the pre- and post-tests. Some of the returned forms lacked identification numbers and on others no questions were answered, whole pages were insufficiently completed, or completely missing. Unfortunately, we have no information on these missing participants. It was impossible to assess and match the study IDs from the test forms with the socio-demographic questionnaires from several of the Russian units

(see Table I). A total of 316 participants with complete baseline data were identified, and 293 participants completed both pre- and post-assessment. Most of the 23 missing participants were Russian.

Instruments

A socio-demographic questionnaire was developed and used in a pilot study in 2011 in a different sample than the final study population, and was translated into Swedish, Danish, Estonian and Russian, and then back-translated to ensure methodological quality. This questionnaire obtained data concerning age, education, housing in the last year, income in the last year, marital status and children, as well as several correctional variables (correctional facility; high-risk prison, low-risk prison or serving in the community; conviction; previous conviction; and length of sentence).

The SOC-scale has been demonstrated to be a cross-culturally appropriate instrument for measuring how people cope with stressful situations and stay healthy (Antonovsky, 1987). This questionnaire has been translated into about 50 languages in 45 countries (Eriksson, 2014). The questionnaire is based on self-report, and the scale consists of 13 items on a seven-point Likert scale, and they cover the three dimensions of SOC: comprehensibility – the cognitive component (five items); manageability – the instrumental or behavioral component (four items); and meaningfulness – the motivational component (four items). The SOC-13 scale is regarded as a reliable and valid instrument, with a reported internal consistency (Cronbach's α) of 0.70-0.92 (Eriksson and Lindström, 2005). In the present study, the Cronbach's score was 0.65. Total scores on the SOC-13 scale range from 13 to 91, with higher scores indicating a stronger SOC.

The Hospital Anxiety and Depression Scale (HADS), is a self-administered questionnaire and was used in the current study as a measure of global emotional distress (Zigmond and Snaith, 1983). The HADS-14 has been validated in several studies and translated into 78 languages. The two dimensions of the questionnaire measure depressive symptoms (seven items) and anxiety symptoms (seven items). Each item scores on a (0-3) response category, and the total score for emotional distress ranges from 0-42 (Zigmond and Snaith, 1983). Good internal consistency on Cronbach scores has found to be 0.94 on the total HADS score (Whelan-Goodinson *et al.*, 2009). In the present study, the Cronbach score was 0.88. Researchers have recently recommended that the total score should be used (rather than the sub-scale scores) (Luciano *et al.*, 2014). As used in the current study, the total scores can be interpreted to indicate normal (0-14), mild (15-20), moderate (21-29) and severe (30-42) emotional distress.

The two instruments were available in Norwegian, Swedish, Russian and Danish, and was translated into Estonian according to standard forward and backward procedures (Hawkins and Osborne, 2007).

Table I Study population by country						
	<i>Total</i>	<i>Russia</i>	<i>Norway</i>	<i>Denmark</i>	<i>Sweden</i>	<i>Estonia</i>
<i>(a) Study population</i>						
Institutions	32	7	9	4	8	4
Groups	85	35	16	10	17	7
Participants	<i>n</i> = 534	<i>n</i> = 263	<i>n</i> = 83	<i>n</i> = 48	<i>n</i> = 95	<i>n</i> = 45
<i>(b) Baseline data (T1)</i>						
Institutions	24	4	6	4	7	3
Groups	59	15	13	9	17	5
Participants	<i>n</i> = 316	<i>n</i> = 90	<i>n</i> = 69	<i>n</i> = 37	<i>n</i> = 84	<i>n</i> = 36
<i>(c) Pre- and post-test data (T1, T2)</i>						
Institutions	22	4	6	4	6	2
Groups	56	13	13	8	17	5
Participants	<i>n</i> = 293	<i>n</i> = 80	<i>n</i> = 68	<i>n</i> = 37	<i>n</i> = 81	<i>n</i> = 27

Ethical considerations and approvals

The correctional services in Estonia, Norway, Sweden, Denmark and the Russian Federation approved the study. The study was performed in accordance with the Helsinki Declaration (2013), and ethical research committees in each country approved the study. The participants signed informed consent forms before they completed the instruments, and they were assured that their responses were confidential and anonymous. Each participant was given a random number and the researchers did not know which names were associated with the participants' numbers.

Statistical analyses

One-way analysis of variance (ANOVA) was used to compare baseline mean differences in emotional distress and SOC for the five countries. Clustered measures of SOC and HADS were obtained from the individuals in different intervention groups ("VINN" groups) from different institutions. It is unreasonable to assume that observations in the same intervention group or institution are independent. Therefore, a multilevel linear regression (MLR) model is one way of analyzing dependent or clustered data. The four levels are: country, correctional institution, group and participant. Country was used as a fixed effect because we wanted to compare changes in HADS and SOC for the five different countries. We used group and correctional institution as random effects (levels) in the analyses.

To assess the changes of SOC and emotional distress in women who completed the program; two separate MLR models were fitted to the data on HADS-scores and on the SOC scores. HADS and SOC scores were used inter-changeably as explanatory variables in each of the two models.

Both univariate and multivariate MLR models were used to assess the unadjusted and adjusted effects of individual-level variables, respectively. These analyses were preceded by two steps. First we fitted variance-components models (models without adjusting variables) to assess the correctional institution-level differences, group-level differences and the individual participant-level differences on HADS and SOC scores. From the variance components models, we obtained the intra-cluster correlation (ICC), a measure of the amount of variability in SOC and HADS scores that can be attributed to the different levels of the data levels. Second, we assessed the effects of the cluster-level factors on both HADS and SOC scores in the MLR models. All models were fitted using Stata version 13.1 and SPSS version 21.

Results

Baseline

At baseline, there were 316 participants with complete questionnaires (73 percent of those completing the program). The median age was 34 years (SD 10.8, range 15-74 years). Women from Russia were significantly younger than women from Sweden and Denmark ($p < 0.01$). In total, 40 percent reported either no income or having received social security benefit payment the year prior to their participation in the program.

The most common offence was drug trafficking (44 percent), which included 64 percent of the Russian participants and 42 percent of the Estonian participants. Violence was the next most common offence (15 percent) and included 30 percent of the Swedish women. In total, 16 percent of the Danish participants reported convictions for murder or attempted murder; 83 percent of the Norwegian participants were on probation, and all the Russian participants were serving in high-security prisons; 67 percent of the Russian women were serving sentences longer than five years. The Norwegians had the shortest sentences. Further details are provided in Table II.

The mean score for emotional distress (HADS) by country, using one-way ANOVA comparisons ($N = 316$) for the full sample was 17.36 points (SD 8.61 points); 43 percent of the participants had a mean HADS score higher than 21 points, and 5 percent had mean scores higher than 30 points. The Russian (18.33, SD 7.39) and the Norwegian (18.01, SD 7.70) women had the highest mean HADS scores, whereas the Swedish women (15.67, SD 9.03) had the lowest. Women who had received social security benefit payments in the previous year had significantly higher HADS scores than women who reported having had a personal income in that year

Table II Baseline demographic and correctional characteristics of participants by country

Country	% of total (<i>n</i> = 316)	% of (<i>n</i>) participants for each country				
		Russia <i>n</i> = 90	Norway <i>n</i> = 69	Estonia <i>n</i> = 36	Denmark <i>n</i> = 37	Sweden <i>n</i> = 84
<i>Education</i>						
No documentation of education	8	1		14	16	15
< 9 years	36	19	39	55	46	42
10-13 years	42	58	49	28	16	36
University or college	14	22	12	3	22	7
<i>Housing last year</i>						
Prison/institution	18	9	14	24	46	18
With parents	13	33	5	15		1
Apartment or own house	61	51	70	58	43	73
Homeless	5	3	8	3	3	7
Other	3	4	3		8	1
<i>Income last year</i>						
No income	12	7	11	9	28	15
Social security payment	32	11	58	24	25	39
Own income from work	33	54	29	32	17	19
Supported by parents or others	23	28	2	35	30	27
<i>Marital status</i>						
Single	33	30	41	32	28	34
Married or partner	44	38	45	56	56	45
Divorced or other	23	32	14	12	16	21
<i>Children</i>						
0 children	35	34	36	39	30	34
≥1 children	65	66	64	61	70	66
<i>Correctional facility</i>						
High-risk prison	54	100	1	47	38	56
Low-risk prison	22	0	16	22	62	36
Probation	24	0	83	31	0	8
<i>Previous convictions</i>						
First-timer	46	44	52	50	43	41
> 1 time before	54	56	48	50	57	59
<i>Length of sentence</i>						
< 9 months	23		64	12	24	19
10-24 months	26	7	16	30	41	46
2-4 years	23	26	15	30	8	20
> 5 years	28	67	5	27	27	6
<i>Sentence/convictions</i>						
Drug trafficking	44	64	41	42	41	29
Violence	15	9	6	12	16	30
Theft, robbery	14	12	10	21	8	17
Economy or property	11	2	22	6	11	11
Murder or attempt to	3	0	4	0	16	1
Drug-driving	4	0	10	6	3	5
Other	9	13	7	13	5	7
Age in years (median)	34	32	35	29	39	38

Note: *n* = 316

($p = 0.027$). Those who were supported by their parents or others in the previous year had lower HADS scores than women who received social security benefit payments ($p = 0.03$).

The mean SOC score by country with one-way ANOVA comparisons for the full sample ($N = 316$) was 52.4 (SD 0.22). In total, 50 percent of the participants had a mean SOC score lower than 50 points. The Norwegian women had the lowest mean SOC score (48.6, SD 8.05) and the Swedish women had the highest mean SOC score (53.9, SD 7.80). SOC was significantly correlated with correctional facility and length of sentence (for both, $p = 0.04$). Although the

baseline mean SOC score in the full sample ($N=316$) was 0.5 points higher than that of the completers ($n=293$), no statistically significant differences were found.

We assessed whether the degree of variability in HADS and SOC scores at the baseline was explained by differences between correctional institutions, groups and individuals ($n=293$). Estimates of the ICC were obtained from the variance components models at baseline. Significant variations between individuals ($n=293$) were observed, but very little variability was observed between countries and correctional institutions, or between the groups in the HADS model. Individual-level differences explain 99 percent of the variability in the mean HADS scores and 50 percent of the variability in the mean SOC scores. For each point increase in SOC among the individuals, the HADS scores decreased significantly by 0.27 (95 percent CI $(-0.44, -0.10)$) points, whereas higher HADS scores were associated with lower SOC scores of 0.33 (95 percent CI $(-0.54, -0.12)$) points.

Changes in SOC and HADS from before to after the program

Table III shows significant improvements in the mean SOC scores ($p < 0.01$) for completers ($n=293$), and for the Swedish ($p=0.002$) and Norwegian women ($p=0.001$). The mean HADS score decreased significantly ($p < 0.01$) for the participants in the five countries from pre- to post-measurement.

The MLR analyses showed that emotional distress (HADS) decreased significantly -3.80 points (95 percent CI $(-4.61, -2.97)$), and SOC significantly improved from before to after the "VINN" program by 1.84 points (95 percent CI $(0.72, 2.92)$), regardless of country and correctional institution.

The ICC showed that 35 percent of the variability in HADS and 41 percent of the variability in SOC was explained by factors at the individual level. Group-level factors explained 13 percent of the variability in SOC scores and 4 percent of the variability in HADS scores. At the institution level, 4 percent of the variability in SOC scores and less than 4 percent of the variability in HADS scores were explained. Norwegian and Danish women convicted for murder or attempted murder had a significantly higher decrease in HADS compared to women convicted for other crimes ($p < 0.01$).

In the SOC univariate model, for each point decrease in HADS, SOC increased by 0.46 points (95 percent CI $(0.37, 0.55)$). Women with no income had a significant increase in SOC of 2.37 points (95 percent CI $(0.02, 4.73)$).

Table IV shows the decrease in HADS after adjusting for conviction in the multivariate MLR model. HADS decreased significantly by -0.35 points for each point increase in SOC (95 percent CI $(-0.43, -0.28)$).

Table III Changes in mean estimates of emotional distress and sense of coherence from baseline (T1) to after intervention (T2)

	Total ($n=293$)	Russia ($n=80$)	Norway ($n=68$)	Estonia ($n=27$)	Denmark ($n=37$)	Sweden ($n=81$)
<i>HADS</i>						
T1	15.2	15.42	16.03	15.43	15.99	13.62
T2	13.57	11.38	12.15	10.47	11.38	10.86
<i>Changes in HADS</i>						
Mean score	-3.8	-3.84	-4.38	-5.00	-4.63	-2.61
(95% CI)	$(-4.61, -2.97)$	$(-5.52, -2.16)$	$(-6.09, -2.67)$	$(-8.96, -1.04)$	$(-6.91, -2.36)$	$(-3.85, -1.38)$
<i>p</i> -Value	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01
<i>SOC</i>						
T1	52.4	53.10	48.66	52.02	53.8	54.09
T2	54.24	53.39	51.56	53.77	55.99	56.33
<i>Changes in SOC</i>						
Mean score	1.84	0.39	2.65	1.49	1.52	2.52
(95% CI)	$(0.72, 2.92)$	$(-1.78, 2.55)$	$(0.66, 4.65)$	$(-2.98, 5.96)$	$(-1.76, 4.80)$	$(0.42, 4.42)$
<i>p</i> -Value	< 0.01	< 0.72	< 0.01	< 0.50	< 0.35	< 0.02

Notes: $n=293$. HADS, the hospital anxiety and depression scale/global emotional distress; T1, before the program; T2, after the program; SOC, the sense of coherence (SOC-13) scale/the Life Orientation Questionnaire

Table IV Multivariate multilevel linear regression for emotional distress, HADS after adjusting for SOC and conviction

Covariates on HADS	Estimate (95% CI)	p-Value
SOC	-0.35 (-0.43, -0.28)	< 0.01
Conviction		
Referent: crime for profit		
Drunk driving	-0.85 (-3.61, 1.87)	0.53
Drug trafficking	0.38 (-1.07, 1.84)	0.60
Violence	-1.10 (-2.93, 0.74)	0.24
Murder or attempted murder	-5.02 (-8.46, -1.58)	0.04
Others	0.45 (-1.92, 2.81)	0.71

Notes: $n = 293$. HADS, the hospital anxiety and depression scale/global emotional distress; SOC, the Life Orientation Questionnaire (SOC)/the sense of coherence scale

The SOC multivariate model (Table V) showed that for each point decrease in HADS, SOC increased by 0.46 points (95 percent CI (0.37, 0.56)).

Women who reported no prior income had a significant increase in SOC of 2.39 points (95 percent CI (0.11, 4.66)) compared to women who were supported by their parents or others who had a non-significant increase in SOC. No significant associations were found between changes in SOC in terms of age, marital status, education and the number of children.

Discussion

This is the first study to investigate the impact and compare outcomes of a cross-national accredited program ("VINN") in populations of women serving sentences in Sweden, Norway, Denmark, Estonia and Russia. Upon entering the program, the women reported a higher degree of emotional distress and a lower SOC; the greater the emotional distress they reported, the lower was their SOC. The mean SOC score (52.4 points) for the participant at baseline was lower than has been reported for women in the general population (64.0 points) (Hintermair, 2004). A fascinating result was the limited variability of the responses related to emotional distress and SOC between the correctional institutions in the five countries.

After completion of the "VINN" program, SOC increased and emotional distress decreased significantly at the individual level, regardless of institution and country. Our findings confirm the relatively high-negative correlation between anxiety and depression and with SOC (Moksnes *et al.*, 2011). After employing multilevel analyses, the observations were that participation in the "VINN" program enhanced an individual participant's ability to cope with emotional distress, regardless of country, institution and jurisdiction. Serving a community sentence or a prison sentence did not impact the women's emotional distress or their SOC.

Table V Multivariate multilevel linear regression for SOC after adjusting for the effect of HADS and income

Covariates on SOC	Estimate (95% CI)	p-Value
HADS	0.46 (0.37, 0.56)	< 0.01
Income last year		
Referent: supported by parents or others		
No income	2.38 (0.11, 4.66)	0.04
Own income	0.74 (-1.05, 2.53)	0.42
Security payment	0.61 (-1.20, 2.43)	0.51

Notes: $n = 293$. HADS, the hospital anxiety and depression scale/global emotional distress; SOC, the Life Orientation Questionnaire (SOC)/the sense of coherence scale

Improvements were also unrelated to length of sentence, country, institution or the first-time-offender status of the participants. The variability in the improvements of SOC can be explained by individual factors and within-group factors. Changes occurs within each woman, because she is her own “leading contributor to change.” This confirms that the motivation to change is elicited from within (Miller and Rollnick, 2013).

Improving SOC and decreasing distress

After the program, the participants in the current study moved toward greater health on the “health continuum” (Antonovsky, 1987) from before to after their participation in the “VINN” program. By increasing their SOC, the ability to manage tension increases, thus preventing tension from being transformed into emotional distress. Antonovsky linked mental health to a person’s position at any point in his/her life cycle on: “[...] a continuum that ranges from excruciating emotional pain and total psychological malfunctioning at one extreme to a full, vibrant sense of psychological well-being at the other” (Antonovsky, 1985, p. 274). The present study confirms earlier studies that report high levels of mental health problems among Norwegian women serving sentences, both among inmates (Amundsen, 2011; Cramer, 2014) and probationers (Højdahl and Kristoffersen, 2006).

The current study demonstrates a significant reductions in emotional distress, as more women were categorized within normal emotional distress range after the program than before, based on the categories of Zigmond and Snaith (1983), and this was significantly associated with an increase in SOC. One explanation given by the women was that the relaxation exercises conducted in each session of the program were helpful in managing personal stress, coping with sleeping problems, self-injury, anxiety and inner turmoil (Højdahl *et al.*, 2013, 2014). Participation in the group may have reduced feelings of loneliness and isolation.

Another explanation is that the women replaced some of their negative feelings with more positive thoughts about their coping abilities. The women might have recognized existing and possible new relationships, and understood how to receive and give positive affirmations, respond to criticism and practise self-care. Self-reflection strengthens a person’s self-worth and self-identity, and it is an important instrument for constructing coping stories (Langeland *et al.*, 2007). This is central when working with active adaptation to correctional system and to the life in community.

Antonovsky (1987) explained that the manner in which people construct their reality is a crucial factor in improving coping and enhancing health. Examples of important resources for promoting a strong SOC are cultural capital, social support, self-identity, commitment, income, knowledge, healthy behavior, intelligence, traditions and one’s view of life (Antonovsky, 1987). If someone has these kinds of resources at her disposal or in her immediate surroundings and the ability to utilize them, she has a better chance of managing risky situations and the challenges of life (Lindström and Eriksson, 2005). Possible explanations of the findings of the current study (on the individuals) are that the women identified resources in themselves or in their surroundings when participating in the “VINN” program, and their ability to utilize the resources increased. This confirms Antonovsky’s (1987) suggestion that social support and improving self-identity are the most crucial factors in increasing SOC and for active adaptation to stress-rich environments. The present study confirms other researchers that found improvements in SOC following participation in psychological interventions in correctional services (Berman, 2008; Chen, 2010; Kuposov *et al.*, 2003). Kuposov *et al.* (2003) found that an increase in SOC potentially reduced levels of psychopathology among Russian juvenile delinquents and therefore suggested that programs should be directed toward increasing SOC among populations in correctional facilities. These findings are also supported by Chen (2010), who found that the personal coping resources (such as SOC) of drug-abstinent Israeli inmates might play an essential part in maintaining a sense of well-being, mental health and help in coping with life’s demands.

The availability of membership in a group and receiving support from the group is another explanation of the changes in SOC and emotional distress, and is supported in interviews with the women (Højdahl *et al.*, 2014). A strong therapeutic alliance and a collaborative group atmosphere

is a key feature in providing empathic foundations, and commitments when people undertake a program (Yalom and Leszcz, 2005). This together might empower the women to find a meaningful life (Antonovsky, 1987). It is essential to keep the details of the women's traumatic histories to a minimum, to avoid triggering reactions to trauma (Miller and Najavits, 2012), and preferably guide the women to ease tension and to find coping strategies relevant to trauma, substance abuse, violence and crime, as in the "VINN" program. Through the group process (in "VINN") it is reasonable to believe that the participants increase their ability to understand their experiences (comprehensibility), make decisions about change (the meaningful and motivational component), address problems and stressors (manageability), and thus promote their SOC and decrease their emotional distress.

Social context

The results of our study suggest that women's financial situations and lack of their own income had a negative impact on their mental health. Women who had social security benefit payment the last year before the program had a significantly higher degree of emotional distress (measured by HADS) compared to women with their own income. The improvements in SOC were significant for women from Norway and Sweden. Providing income alternatives for the women from Russia, Estonia and Denmark are fundamental to their ability to improve SOC and capacity to desist from criminal behavior. Understanding these results and the social context of the women in this study – their convictions and deprivation or lack of freedom and their prior and future concerns about material resources and income – is important for a broad understanding of the results. A positive transition from correctional facilities to the community and a structured follow-up with the women in the community after their release are regarded as critical in their desistance process, because the most common pathways to female crime are substance abuse and poverty (Van Wormer, 2010; WHO, 2009). Crucial for women's rehabilitation is the offer of health care, social support, financial stability and housing (Covington, 2003; Gelsthorpe *et al.*, 2007). Similar studies on DBT (Carr *et al.*, 2011) propose that the basis of rehabilitation is structuring the environment, improving motivation, ensuring generalization of skills, providing skills and enhancing capabilities. These factors together are important for strengthening women's ability to express what triggered their crime and teaching them how to cope with challenges and apply for help from social and welfare services. The need to maintain the changes and provide continuity of care upon release from prison and when the women resettle in the community, is evident. When planning programs and interventions for women, attention must be paid to follow-up periods (Bartlett *et al.*, 2014).

Limitations

Undertaking a study in five countries was challenging because of the importance of adherence to follow up within the institutions from baseline to the end of the study period. Some of the returned forms lacked identification numbers, which made it difficult to pair data with the participants after the program from these test forms. The inclusion of all five countries might be questioned, especially the inclusion of the small sample from Estonia. Because of the limited sample size, the individual data from this country should be interpreted with caution. The results are based on self-reported questionnaires. The multilevel statistical analysis we used strengthened the interpretation of the data and underscored that the changes happened at the individual level. The women are affected by a host of factors when they are serving their sentences. Thus, the results strengthen the belief that it is possible to impact individuals and initiate major changes, regardless of institution and country. It would be important to investigate associations between SOC and type of crime, such as drug-trafficking, violence, crime for profit and white-collar crime, as well as to conduct similar studies in other countries. The long-term impact of the "VINN" program needs to be investigated and assessment after release into the community. The short-term changes are relevant, but only applicable to the countries included in this study.

Conclusion and impact of study results

Despite this study's limitations, the results add new knowledge regarding a coherent theoretical foundation of psychological and motivational programs for women serving sentences, that is,

the “VINN” program’s encouraging outcome on global emotional distress and an enhanced positive orientation toward life. The current study suggests that the concept of SOC (including availability of internal and external resources), as proposed by Antonovsky (1987), combined with motivational interviewing (Miller and Rollnick, 2013), the group process (Yalom and Leszcz, 2005) and cognitive theory (Bandura, 2001) aid women in improving their quality of life and thereby their ability to desist from crime.

The findings demonstrate that those serving in prisons or on probation benefit from the program, and we argue for implementing such interventions in other countries and correctional settings, accompanied by evaluations, research and – when relevant – comparison groups. The potential of this program to promote and facilitate improved health is important for society, especially the judicial system, health care providers and workers interacting with women in correctional facilities.

The provision of programs for women must recognize and address the women’s specific needs, such as material resources and income, and the need to improve their relationships and bonds with others. Practitioners will need to consider all these factors when planning work with women. Synergy must be maintained by researchers, facilitators and service providers involved in unique programs for women. Additional research should investigate whether the participants report sustainability of the changes after completion of the sentence. Enhanced mental health and coping abilities are consistent with recommendations from the World Health Organization and the Health in Prisons Programme (World Health Organization Europe, 2009), which call for health promotion to be a part of offender rehabilitation.

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