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BRIEF, DEVELOPMENTALLY ORIENTED COGNITIVE THERAPY FOR ADOLESCENTS WITH SOCIAL ANXIETY DISORDER: A CASE SERIES FROM A PILOT EVALUATION

ABSTRACT

Background: Social anxiety disorder (SAD) is one of the key mental health disorders of adolescence. Due to the mental health challenge across the globe in this age group, a growing acknowledgement of the need to effectively identify and treat incipient SAD at an early stage has been presented in many countries. Aim: The aim of this study was to examine the accuracy of detection of SAD in schools, using a detection toolkit and a professional operating model in which school psychologists acted in a consultant/coordinator role. The second aim was to gain initial data on usefulness and feasibility of brief, developmentally oriented cognitive therapy (DOCT-SAD) for adolescents with SAD. Methods: Ten adolescents, identified from upper secondary schools with a mean age of 13.8 years, participated in DOCT-SAD. Accuracy rate of detection in the school was calculated as the proportion of adolescents who had interview-confirmed SAD and completed the treatment out of those altogether referred from schools. Usefulness of DOCT-SAD was assessed with pre- post-treatment changes in symptoms of SAD (SPIN), mood (PHQ-9) and in adolescents' wellbeing (YP-CORE), and by evaluating change in DSM-5 diagnostic status. Feasibility was evaluated by semi-structured interviews of adolescents and their parents. Results: Use of the SAD detection toolkit and the professional operating model yielded a 71% accuracy rate for school-based identification of adolescents who had SAD, and who eventually completed treatment. DOCT-SAD showed promise as treatment of SAD: adolescents' symptoms of SAD and depression decreased markedly pre-post effect sizes being 1.6 and 1.4 respectively, adolescents' wellbeing improved, and a 60% rate of diagnostic remission, comparable to established treatments, was found. Feasibility of DOCT-SAD appeared good or excellent for adolescents and parents. Discussion: As incidence of SAD is high in adolescence, methods for detection and treatment are needed. The 10-session DOCT-SAD shows promise for further development as a treatment for adolescent SAD. Conclusion: This case series found support for using a structured detection model, and for treatment of SAD using a brief cognitive therapy program among adolescents identified in the school.

KEY WORDS: SOCIAL ANXIETY DISORDER, ADOLESCENTS, COGNITIVE THERAPY, COGNITIVE BEHAVIOURAL THERAPY, DEVELOPMENTAL FACTORS, FEASIBILITY, STUDY, SCHOOL

1. INTRODUCTION

Social anxiety disorder (SAD) is an anxiety disorder characterized by marked fear and distress in one or multiple social situations. It typically runs a chronic course left untreated (1,2). The central fear in SAD is the fear of being negatively and critically evaluated by others (1). The fear of negative evaluation and its consequences causes intense anxiety, typically leading to either complete avoidance of feared social situations or significant change in individual's behaviour (i.e., dysfunctional safety behaviours) in these situations (3,4).

Research quite systematically indicates that SAD develops in adolescence, the peak period of onset is between 13 to 15 years of age (5-8). Thus, it is one of most frequent mental health challenges for this age group, affecting around 3-9% of adolescents (9). In Finland, the 12-month prevalence of SAD in adolescents is between 3 to 4% (10). SAD frequently leads to impairment in functioning in social relationships and in school, and is associated with an elevated risk of depression and educational underachievement in adulthood (11,12). Comorbidity is frequent among adolescents with SAD, most common comorbid disorders include anxiety and depressive disorders, present in 20 to 60% of youths with SAD (9,10,13-15).

Adolescents with social anxiety and SAD report significant decrease in academic and social functioning (15-17). The onset of SAD during adolescence is particularly detrimental, due to the importance of peer relationships, which is greater than in any other stage of life (18). Due to its linkage with several developmental changes of adolescence, it can be considered as one of the key mental health disorders of this age group (19). Calls for implementation of early, developmentally valid and effective service models and interventions for the most prevalent youth disorders have been presented in several countries (20).

Given the high incidence of SAD in adolescence, it is not surprising that a greater number of psychotherapeutic treatment models have been developed specifically for SAD than for other anxiety disorders in this age group (21). Both group and individual disorder-specific cognitive behavioural treatment models have been presented (22). Several controlled studies show the efficacy of disorder-specific cognitive behavioural therapy (CBT) compared with waiting list or attention control (23,73,79). To the best of our knowledge, there are few direct comparisons between disorder-specific and transdiagnostic CBT. Notably, Ingul (23) performed a comparison between individual cognitive therapy and group transdiagnostic CBT, finding individual cognitive therapy more effective. In addition, research shows that transdiagnostic treatments are not as efficient for SAD relative to other anxiety disorders (24). *Table 1* presents a summary of current psychotherapies showing effect for treatment of adolescent SAD.

Table 1. Psychotherapy trials for adolescent SAD

Study	N	Age	Intervention	Control	Sessions	Comparison	Measure	Effect size	Follow-up
Hayward ⁷³ 2000	35	14–17 (15.8)	CBGT-A (G)	WL	16x90min	CBGT-A>WL	ADIS-C/P	- **	No difference 12 mos
Garcia-Lopez ⁷⁴ 2002	59	15–17 (15.9)	CBGT-A (G)	WL	16x90 min / 14 wks	CBGT-A=WL	ADIS-C/P	0,94 ^a	Gains maintained 12 mos
			SET-A (G)	WL	29x / 17 wks	SET-A>WL	ADIS-C/P	1.46 ^a	Gains maintained 12 mos
			IAFGS (G)	WL	12 x 90 min / 12 wks	IAFGS>WL	ADIS-C/P	1,3 ^a	Gains maintained 12 mos
Baer ⁷⁵ 2005	12	13–18 (15.5)	Mod. SET-C (G)	WL	12x / 3 mos	SET-C>WL	SPAI	0,85 ^a	-
Masia-Warner ⁷⁶ 2005	35	13–17 (14.8)	SASS (G)	WL	12 + 12x / 12 wks	SASS>WL	ADIS-C/P	2,4 ^a	Gains maintained 9 mos
Masia-Warner ⁷⁷ 2007	36	14–16 (15.1)	SASS (G)	AC	12 + 12x / 3 mos	SASS>AC	ADIS-C/P	1,9 ^a	Gains maintained 6 mos
Herbert ⁷⁸ 2009	73	12–17 (15.0)	G-CBT (G), I-CBT	PST	12x / 3 mos	G-CBT= I-CBT=PST	SPAI-C	-*	No difference 6 mos
Tillfors ⁷⁹ 2011	19	15–21 (16,5)	Internet CBT	WL	9x/ 2 mos	Internet CBT>WL	LSAS-SR	1,28 ^a	Gains maintained 12 mos
Ingul ²³ 2014	57	13–16 (14,5)	CBTI, CBTG (G)	AC	12x50min, 10x90min	CBTI > CBTG, CBTI >AC, CBTG =AC	SPAI-C	2,07 ^b	Gains maintained 12 mos
Masia-Warner ⁴⁴ 2016	77	14–17 (15,4)	P-SASS (G)	AC	12x/3 mos	P-SASS>AC	ADIS-C/P	0,67 ^a	Gains maintained 5 mos

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Study	N	Age	Intervention	Control	Sessions	Comparison	Measure	Effect size	Follow-up
			C-SASS (G)	AC	12x/3 mos	C-SASS>AC	ADIS-C/P	0,69 ^a	Gains maintained 5 mos
			P-SASS (G)	C-SASS (G)	12x/3 mos	P-SASS=C-SASS	ADIS-C/P	.*	.*

Active treatments: The CBGT-A= Cognitive-Behavioural Group Therapy for Adolescents, SET-A= Social Effectiveness Therapy for Adolescents, IAFSG= Intervención en Adolescentes con Fobia Social Generalizada (The Therapy for Adolescents with Generalized Social Phobia), SET-C= Social Effectiveness Training for Children and Adolescents, SASS= The intervention, Skills for Academic and Social Success, G-CBT= Group Cognitive-Behaviour Therapy, I-CBT= Individual Cognitive Behaviour Therapy, CBTI= individual cognitive therapy using cognitive model by Clark and Wells, CBTG= group cognitive behavioural therapy, C-SASS= SASS delivered by school counsellors, P-SASS= SASS delivered by psychologists
 Controls: WL= Waitlist, AC=Attention control, PST= Psychoeducational-Supportive Therapy
 Primary outcome measures: SPAI-C= Social Phobia and Anxiety Inventory for Children, SPSQ-C= Social Phobia Screening Questionnaire, ADIS-C/P= Anxiety Disorder Interview Schedule, Child and Parent Version. LSAS-SR=Self-report version of the Liebowitz Social Anxiety Scale
 a= between treatment and control group, b= CBTI condition within group (pre-post) effect size, G=Group, ES=Effect size, cohen's d: d = 0.2 small effect size, 0.5 medium effect size, 0.8= large effect size, *=no significant difference, **effect size not reported

Disorder-specific group treatments for SAD typically include components such as psychoeducation, cognitive restructuring, anxiety management, situational exposure, group practice and social skills training (SST) (25-27). Group treatments share elements included in CBT treatments for anxiety, but stress disorder-specific psychoeducation, and typically add practices enhancing interaction between participants as in-session exposures. Inclusion of SST in the programmes is based on research indicating that adolescents with SAD may lack social skills, such as making eye contact, not noting physical posture, or using atypical vocal tone or volume (28).

The individual disorder-specific SAD treatments for adolescents have mainly been based on the cognitive model of SAD (3), which emphasizes the role of negative beliefs and images which are activated as the individual enters a social situation, are active during the situations, and during the post-event processing of the situations. The model lists three key maintaining factors of SAD symptoms: excessive self-focused attention, use of internal information to predict how one appears to others and engagement in a broad range

of in-situation safety behaviours. A treatment model based on the cognitive model (CT-SAD) differs in many aspects from CBT models, its key components being dropping of safety behaviours, direction of the attention outward and behavioural experiments (29). The CT-SAD has gained strong support for efficacy in adults (30). The cognitive model has also spurred research to test whether empirical findings behind the cognitive model, originally found in adult populations, are found in adolescents (4,12,31). In 2016, Leigh and Clark adapted the CT-SAD for adolescents (CT-SAD-A) and showed promising results of feasibility for the treatment in a pilot case series (32).

Although the available treatments for adolescent SAD already include developmental modifications, it has been suggested that a more systematic orientation to age-phase-specific developmental risk factors for psychopathology might enhance treatment efficacy (21). From the perspective of developmental psychopathology, interaction between development of social cognition, change in social investments, emotional salience of peer relationships and the increase of SAD symptoms may call for even more developmentally

oriented treatments for adolescent SAD (19,33). The need to establish and maintain a positive self-image, and to avoid excessive emotional comparison to others and self-criticism, seems important in adolescence (34,35). Experienced self-deficiencies are central to SAD (36). Socially anxious adolescents' frequent experiences of themselves as weak or not normal may lead to construction of global, negative self-evaluations (37).

From the perspective of efficient use of public resources, clinical interventions should be implemented in a way to ensure their accurate targeting of the group in which the greatest gains are to be found (38). Accordingly, it is important to pair interventions with credible tools and practices for identification of the valid target group, to ensure a smooth and rapid route to intervention (39). From a clinical viewpoint, the feasibility of the treatment model for its target group and for the treatment providers needs to be ascertained (40). For adolescents, treatment characteristics such as brevity, suitable treatment tempo, consideration of motivation and using peer support may be important to consider (41).

In Finland, availability of brief psychotherapies for adolescents' anxiety disorders or SAD in primary level services or schools is low overall. There is an increasing strain on the secondary services (42). Given the high incidence and prevalence of SAD in adolescence, feasible and effective treatment models are needed. One open important question is how many applicable cognitive or cognitive behavioural SAD treatments, of 12-16 sessions or less, are available in adolescent clinical services (43) or in primary care services for them. There is some evidence supporting the use of individual and group adolescent SAD treatments in community mental health services (23) and for group treatments in schools (44).

To increase availability of treatment options for adolescent SAD, a brief cognitive therapy model, the Developmentally Oriented Cognitive Therapy for Social Anxiety Disorder in Adolescents (DOCT-SAD) was developed in Tampere University (45). DOCT-SAD is a 10-session, combined individual-group intervention (in Finnish: Tosi minä-treeni). It has been constructed of components included in effective individual and group treatments for SAD in adolescents (12,44). In addition, its methods integrate research findings on self-development, socio-cognitive development and on key transition processes in the adolescent period (46), and findings on the central role of negative self-experiences in SAD (36,47,48).

A service development project between Tampere University, University of Helsinki and City of Tampere was started in autumn 2021. A survey conducted in the school health and welfare services (SHWS) in Tampere indicated that a considerable number of adolescents in secondary upper schools, who were in contact with the SHWS, suffered from elevated symptoms of SAD. This was indicated by a score above the clinical cut-point on the Social Phobia Inventory (SPIN) (49). A research trial was launched to examine the feasibility and usefulness of DOCT-SAD as a treatment for SAD in adolescents. The first DOCT-SAD treatments, described in this study, were conducted in April-May 2022.

The specific aims of the current study were to:

1. Examine identification of SAD in the school health and welfare services, using a brief detection checklist and a professional operating model for enhancing detection and coordination.
2. Measure the usefulness of DOCT-SAD by examining pre- to post-treatment changes in symptoms of SAD and depression, in wellbeing, and changes in severity of SAD and diagnostic status.
3. Evaluate the feasibility, acceptability and perception of change experienced during DOCT-SAD by adolescents and their parents.

2. MATERIALS AND METHODS

2.1. PARTICIPANTS

Participants were students from five upper secondary schools in Tampere. At baseline assessment mean age of participants was 13.8 years (SD = 0.92). Nine (90%) were girls, one (10%) was a boy. Adolescents reported having suffered symptoms of social anxiety for a little over two years prior to treatment (mean 2.3 years, SD = 0.82). All participants had had previous contact with the school health and welfare services, either with school psychologist, nurse or social worker. Two participants reported having been previously treated or evaluated in child/adolescent psychiatric services. None of the participants had been previously treated for SAD. All participants were Caucasian, and 90% had Finnish as their native language. Of the participants, four (40%) had a comorbid depressive disorder and five (50%) had a comorbid anxiety disorder. Baseline characteristics are shown in [Table 2](#).

Table 2. Baseline characteristics of the participants

Baseline characteristics	GROUPS 1 & 2 N = 10
Age (Mean [SD])	13.8 (0.92)
Gender	9 (90%) females
Pre-treatment scores (Mean [SD])	
SPIN	42.5 (10.96)
PHQ-9	10.1 (3.41)
YP-CORE	16.1 (3.81)
CSR	5.4 (1.08)
Comorbid disorders	
Dysthymia	2
Depression NOS	2
Any depressive disorder	4
Generalized anxiety disorder	2
Anxiety disorder NOS	1
Specific phobia	2
Any anxiety disorder	5

2.2. PROCEDURE

This study reports first results from a pilot trial of DOCT-SAD for treatment of adolescents with SAD identified by school health and welfare services. The DOCT-SAD interventions were conducted at the teaching and research clinic at Department of Psychology, Tampere University. Participants were recruited from the upper secondary schools of City of Tampere. The two therapists were graduate major psychology students, who received roughly five days of theoretical and clinical training during winter 2021-2022, followed by combined weekly method training and clinical supervision during the intervention in spring 2022 by an experienced cognitive therapy trainer.

A procedure for detecting adolescents with SAD from the schools was agreed between the project leaders, researchers and key professionals from the SHWS. A detection toolkit for SAD, consisting of: 1. the SPIN questionnaire, 2. the treatment suitability evaluation checklist (TSEC), and 3. a short psychoeducation material targeted at differentiation

between the core symptoms of anxiety and depression, was jointly prepared by the project group. The toolkit was sent electronically to all SHWS professionals.

The project group agreed on setting a professional operating model for detection, coordination and treatment referral in the schools. Five school psychologists were named as consultants for the detection of SAD (i.e., they were available for other SHWS professionals' queries regarding identification of SAD), and as coordinators in the referral process from the SHWS to the clinical treatment (i.e., they coordinated and monitored the flow of referrals in collaboration with the research group).

All SHWS professionals were given a short, 1-hour live/remote training on the detection toolkit for SAD, and the remote presentation was recorded for later access. The five consulting/coordinating school psychologists participated in the monthly project group meetings, and to the development of the toolkit, also acquiring advanced knowledge of the clinical assessment of SAD. They also took on the task of actively bringing up SAD screening and assessment issues with other SHWS professionals in SHWS meetings. Thus, the professional operating model strengthened the use of the detection toolkit.

The detection and screening process of the study consisted of three steps:

First stage: The SHWS professionals, briefly trained in the use of the detection toolkit, identified adolescents using the toolkit shared electronically with them. They were instructed to consult the five consultant/coordinator school psychologists in queries about identification, and to prepare a possible referral with them.

Second stage: For the adolescents that were deemed positive (i.e., fulfilling treatment suitability evaluation checklist criteria) in the school, following a discussion with consultant/coordinator psychologist, a contact to research group was taken. The researchers then conducted a mobile phone check with adolescent and her/his parent, in which the intake criteria were again reviewed. When criteria were met, or deemed very likely to be fulfilled, a clinical interview was arranged.

Third stage: The adolescents and their parent(s) were met for a full diagnostic interview at the university. The fulfilment of DSM-5 SAD criteria (1) was assessed, and presence of all comorbid anxiety and depressive disorders was assessed. For those who fulfilled criteria for primary DSM-5 SAD, this visit was also the first DOCT-SAD session. However, if the full criteria for

primary SAD, or other intake criteria were not met, the adolescent did not proceed to treatment, the family received feedback and advice, and the following referred adolescent was evaluated.

The study was reviewed and approved by the Regional Ethics Committee of the Expert Responsibility area of Tampere University Hospital.

2.3. INTERVENTION: DOCT-SAD

The DOCT-SAD is composed of four individual sessions and six group sessions. The first two individual sessions include developmentally tailored and normalizing assessment with the adolescent, facilitating engagement, SAD and intervention psychoeducation, and a thorough individual and historical case formulation according to cognitive model. The parent attends the first session. The latter two individual sessions include working with traumatic memories using memory rescripting, and doing a behavioural experiment with a research assistant, unknown to the adolescent. The aim is to help the participants eliminate their safety behaviours and to engage in spontaneous interaction with others. These components follow the theoretical principles and practical approaches of the cognitive model of SAD and the CT-SAD-A treatment programme (3,50).

The six group sessions, in groups of five-six participants, involve adolescents to participate actively in exercises and behavioural experiments in group sessions to gain maximum benefit from the intervention. Attention training, experiential exercise to demonstrate the effects of self-focused attention and safety behaviours, adapted as group/pair training and behavioural experiments, are drawn from the CT-SAD-A model. Behavioural experiments are done in-session, with interaction between partners, and outside the office. They are planned individually according to individual conceptualization (3,50).

Throughout the programme, normalizing psychoeducation material is given on cognitive, affective and behavioural aspects of SAD according to CT-SAD-A, however, this is enhanced by a specific focus on adolescents' self-concept. The development of self-concept is presented, and related issues are reviewed (51,52). A specific regard is given to associations between adolescents' SAD symptoms and their experienced self, with their core fears being linked to perceived flaws and deficiencies related to their self-experience, as presented in the theoretical model of

David Moscovitch, presented in 2009 (36). The key self- and other beliefs are included in cognitive conceptualizations of symptom formation, and construction of behavioural experiments is informed by the identified, negative self-related beliefs. As a continuum of self-development, the adolescents are encouraged to engage in practices where they abandon the hiding/shelter-seeking self (e.g., self-concealment) related to heightened, developmental dependency on peer opinion, represented by excessive tendency to safety behaviours, and progress to repeated peer group practices where they rehearse being their authentic, true self in various spontaneous interactions (36,51,52).

In the final stage after imagery work on traumatic memories, a brief practice on self-compassion is added, following prior psychoeducation on progressing from self-concealment, to being their authentic self, and last to being their authentic self who is supportive and compassionate towards their own difficulties and anxiety (46,47).

2.4. MEASURES

Detection toolkit for SAD in schools

The detection toolkit for SAD in schools was modelled on and further developed from previous instruments for detection of anxiety and depression, and for evaluation of treatment suitability among adolescents in schools or in primary level services (39,53). The toolkit comprises three parts: the SPIN questionnaire (49), the TSEC, and a short 1-page picture presentation material targeted at enhancing differentiation between core symptoms of anxiety and depression. The toolkit material was distributed to SHWS professionals electronically.

The instructions for SHWS professionals stated the use of the TSEC in the identification process. The first task on the checklist is to use the SPIN as a screen with the requirement of adolescent scoring above the cut-point (24 points or more). The checklist then presents five additional criteria related to the treatability of the problem to be evaluated: differentiating SAD from other disorders, evaluation of whether SAD is the primary problem/disorder, excluding severe mental health disorder requiring acute measures, excluding severe family or social condition endangering development and requiring acute measures and evaluating the motivation to participate in the treatment. The TSEC is presented in *Figure 1*.

Figure 1. The treatment suitability evaluation checklist

Intake criteria	Measure
1. Social anxiety disorder (SAD) and its severity	SPIN points 24 or over
2. Differentiate SAD from other disorders	The assessment of depressive and other anxiety disorders
3. Evaluate primary SAD	SAD is the primary cause of suffering at this moment and affects the young person's functioning
4. Exclude any other severe psychotic symptoms that demand acute action	Ensure that the young person is not suffering from: <ul style="list-style-type: none"> • psychotic symptoms (=disturbance in the sense of reality) • immediate safety risk (a suicide plan, severe substance abuse) • severe and continuous depression or anxiety that affect functioning • severe malnutrition If any of these occur, direct to further assessment
5. Exclude any family complications that cause measures	Home environment is adequately secure and stable <ul style="list-style-type: none"> • No acute demand for child welfare services
6. Evaluate the motivation to participate	Evaluate the young person's ability to recognize their difficulties AND <ul style="list-style-type: none"> • willingness to discuss their difficulties in the treatment • ability to commit to treatment

The simple psychoeducational picture illustrated the difference between the experience of anxiety (core experience fear or worry) and the experience of depression (core experience sadness/low mood, apathy, hopelessness) and was used to facilitate differentiation between different depressive and anxiety disorders.

Success of the school-based detection of SAD, and the combined evaluation of suitability for treatment, was studied by calculating an accuracy rate. It was calculated as the proportion of adolescents who were confirmed having primary SAD in the clinical interview, and who also completed the DOCT-SAD treatment, out of all adolescents who were referred from school to the treatment.

Outcome measures

Primary outcome measure: Social Phobia Inventory (SPIN)
The SPIN is a 17-item self-report measure of SAD symptoms with good test-retest reliability, internal consistency, and convergent and divergent validity to assess SAD. SPIN assesses three symptom areas of SAD as defined in the DSM-IV and DSM-5: avoidance behaviours, physical symptoms and social fears during previous two weeks (49). SPIN has been found a reliable and valid measure of

SAD among Finnish adolescents; in this study we defined the symptomatic remission according to SPIN as under 24 points, which is the clinical cut-off based on earlier research (54).

Patient Health Questionnaire (PHQ-9)

PHQ-9 is a self-report measure that is widely used for major depressive disorder and has acceptable diagnostic properties (55). PHQ-9 demonstrates similar sensitivity and specificity in adolescent and in adult samples (56).

The Young Person's CORE (YP-CORE)

The self-report 10-item YP-CORE has been demonstrated to have good internal and test-retest reliability (57,58). This instrument has shown adequate psychometric properties as a measure of wellbeing among Finnish adolescents (59).

The diagnostic interview

The diagnostic evaluation was made during the clinical interview at first face-to-face visit. Both the adolescents and their parents were interviewed. Symptoms of SAD according to DSM-5 (1) were systematically evaluated by the researchers. Presence of other comorbid anxiety or mood disorders were also systematically evaluated. The DSM-5 diagnoses were assigned accordingly. A remote video

interview of adolescents and parents was conducted after the last session in the context of the feasibility interview of parents (see below). In two of ten cases both parents participated in the interview, in eight cases the mother participated.

Severity of SAD

The severity of participants' SAD was evaluated with the ADIS-5 clinician severity rating scale (CSR) (60), the DSM-5 version, which defines severity of symptoms by evaluation of the level of anxiety symptoms and the functional impairment associated with symptoms. The CSR uses a 0-8 scale: the score of 4 points indicates threshold for clinical SAD, 4-5 moderate level SAD, 6-7 severe SAD, and 8 very severe SAD.

The feasibility interview

The feasibility interview was informed by the Elliot Change Interview (61), used in a modified form in a previous Finnish intervention trial among secondary school adolescents (62). It was further developed for this study. As part of this interview adolescents were asked about:

1. their experienced wellbeing after the intervention. Adolescents rated their general wellbeing as a numerical value on a 0-10 scale. Thereafter they were asked to give a free, open verbal description in their own words of their wellbeing after the intervention. (Q1)
2. the impact of DOCT-SAD on their wellbeing. The adolescents were asked whether they perceived that the intervention had had an influence on their wellbeing, and the direction of the influence as either positive or negative. Thereafter they were asked to give a free, open verbal description in their own words of how they perceived the intervention had affected their wellbeing. (Q2)
3. their general experience of the intervention as a numerical value on a scale 0-10. (Q3)
4. their open-ended verbal account of the intervention, and their perception of the suitability of the treatment for them (Q4)
5. their experience of the referral process from school to treatment, including their general evaluation of the process on a scale of 0-10, perceived fluency of the process on a scale of 0-10, and their open responses as to whether something should have been done differently (yes/no, if yes, what?). (Q5)
6. their perception of the assessment process at school on a scale of 0-10. (Q6)
7. their perception of the trial assessment process at the University clinic on a scale of 0-10. (Q7)

Questions Q1-Q7 were also presented to adolescents' parents at post-intervention. They were instructed to answer based on their perception of the adolescent.

In addition, treatment completion rates and session attendance rates were calculated as indicators of feasibility of the treatment.

2.5. STATISTICAL ANALYSES

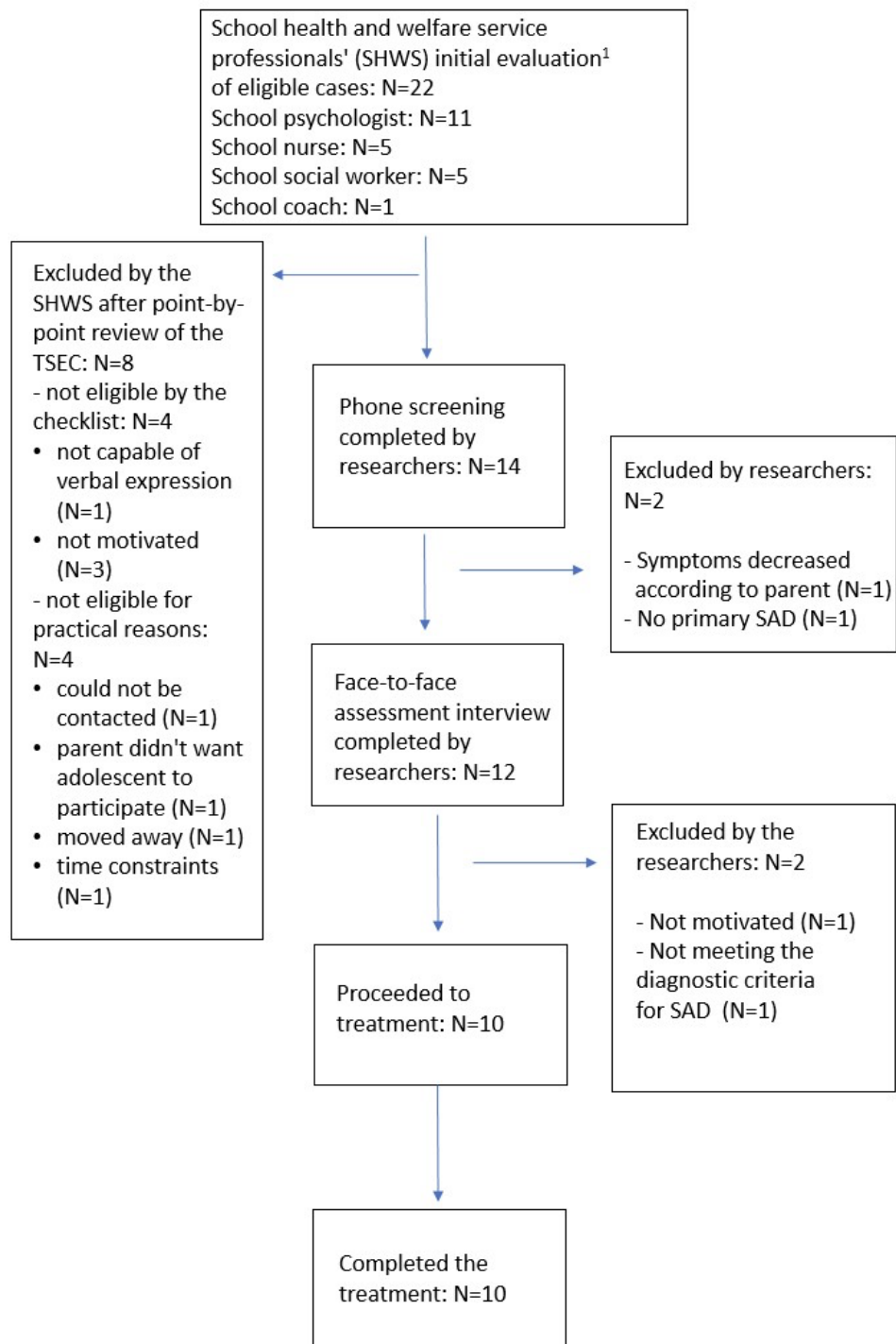
Data were analysed with IBM SPSS statistics version 28. The data were not normally distributed due to small sample size ($n = 10$), therefore the Wilcoxon signed rank test was used, which is the non-parametric alternative to paired samples t-test (63). Statistical methods included comparing means and calculating effect sizes (64). The feasibility questions were examined with basic descriptive analyses: frequencies, means and standard deviations. Responses to the open-ended questions that were given by at least three participants are presented.

3. RESULTS

3.1. DETECTION OF SAD AND SUITABILITY FOR TREATMENT IN THE SCHOOL

An accuracy rate for detection of SAD in the school was calculated as the proportion of adolescents who were confirmed as having primary SAD, and who also completed the treatment, out of all adolescents who were referred from school to the treatment. *Figure 2* presents the detection process step by step as a flow chart.

Figure 2. Detection of SAD in schools



¹ The SHWS professionals' general evaluation of adolescents suffering from social anxiety

The SHWS professionals initially evaluated that 22 adolescents might be eligible for treatment. Of these adolescents, eight (36%) were already excluded at the school; half after a point-by-point review of the treatment suitability evaluation checklist ($n = 4$) by SHWS professionals, and half because of practical obstacles for treatment ($n = 4$). This left 14 adolescents evaluated in the school being likely suitable for DOCT-SAD intervention, and they were referred to treatment.

In the researchers' mobile phone check, two adolescents were additionally excluded, representing 14% of referred adolescents. Twelve adolescents were invited to face-to-face research interview with their parents. In this interview, two adolescents, representing an additional 14% of the referred were excluded. Ten adolescents started, and each one completed the DOCT-SAD intervention. This resulted in accuracy rate of 71% (10/14) for detection of SAD in the school, using the detection toolkit and professional operating model in this project. Of the ten participants, six (60%) came from school psychologists, two (20%) from a school social worker and two (20%) from a school nurse.

3.2. SYMPTOM CHANGE IN PRIMARY OUTCOME MEASURES

SPIN.

We examined the pre- and post-test scores for the SPIN self-report measure as the primary outcome result. The pre- and post-test score change was -18.75 ($Z = -2.80, p =$

$.005, d = 1.614$) (Table 3). At post-treatment, six out of ten (60%) adolescents reached remission according to SPIN.

PHQ-9.

PHQ-9 was used to detect depression symptoms in the participants. The pre- and post-test change was -4.3 ($Z = -2.558, p = .011, d = 1.395$).

YP-CORE.

Adolescents' general wellbeing was measured with the YP-CORE. The pre- and post-test change was -6.6 ($Z = -2.549, p = .011, d = 1.395$).

3.3. SEVERITY OF SOCIAL ANXIETY SYMPTOMS AND DIAGNOSTIC REMISSION

The CSR scores of the treated decreased from mean 5.4 to 3.1 ($Z = -2.68, p = .007, d = 1.497$). In the post-treatment diagnostic assessment, six out of ten (60%) adolescents with primary SAD at the start of the treatment were free of their DSM-5 SAD diagnosis. Of those in diagnostic remission, one participant (17%) had baseline anxiety disorder comorbidity, which was not found post-treatment, whereas of those not in clinical remission, all four had depression/anxiety comorbidity.

Table 3. Pre- and post-treatment change

	Pre-treatment Mean (SD)	Post-treatment Mean (SD)	Pre-post change	P- value ¹	Effect size ²
SPIN	42.5 (10.96)	23.75 (9.28)	-18.75	0.005	1.614
PHQ-9	10.1 (3.41)	5.8 (3.52)	-4.3	0.011	1.395
YP-CORE	16.1 (3.81)	9.5 (6.1)	-6.6	0.011	1.395
CSR	5.4 (1.08)	3.1 (1.1)	-2.3	0.007	1.497

¹ Wilcoxon signed rank test

² Cohen's d

3.4. FEASIBILITY OF DOCT-SAD

The researchers conducted a post-treatment feasibility interview separately for the adolescents ($n = 10$), and for parents ($n = 10+2$) after the intervention.

Wellbeing after DOCT-SAD (Question 1)

The adolescents perceived their general wellbeing after DOCT-SAD as relatively good, mean of their ratings was 7.72 ($SD = 1.15$) on a scale of 0-10. The most frequent themes emerging from adolescents' verbal descriptions on their general wellbeing after the intervention could be classified into the following categories: 1. the treatment improved my wellbeing ($n = 4$), and 2. I became more open ($n = 3$).

Parents rated the general wellbeing of their child after the intervention according to their perception as good, mean of their ratings was 8.45 ($SD = 1.22$) on a scale of 0-10. Most frequent themes emerging from parents' verbal descriptions of their child were: 1. has become more open in communication overall/with parents ($n = 9$), 2. feels more joy ($n = 6$), 3. is more courageous ($n = 5$), 4. spends more with same-aged peers, recognises/communicates feelings more, is in a better mood/humour, takes more initiative in acting independently outside home, is more active in general (each, $n = 3$).

Impact of DOCT-SAD on wellbeing (Question 2)

Of adolescents, 9 out of 10 (90%) reported that the intervention had had a positive impact on their experienced wellbeing, one adolescent could not say whether it had a positive or negative impact. All ten parents (100%) perceived the DOCT-SAD as beneficial to their child's wellbeing.

The most frequent themes arising from the adolescents' open verbal descriptions of how the intervention had affected their wellbeing were: 1. I was able to become more open, treatment helped me to talk to other people ($n = 5$), and 2. it became easier to be in public spaces ($n = 3$).

The most frequent parents' descriptions of how they perceived the intervention had affected their child's wellbeing could be summarized into the following thematic categories: 1. the adolescent was being encouraged in the treatment ($n = 4$), 2. behavioural experiments and other practices were beneficial ($n = 4$), and 3. the adolescent acquired means to decrease avoidance ($n = 3$).

General perception of the DOCT-SAD as a treatment (Question 3)

Adolescents' general perception of the treatment was good, mean of their ratings was 8.1 ($SD = 0.96$) points on a scale of 0-10. Parents rated the treatment for their children

excellent, mean of their ratings being 9.4 ($SD = 1.45$) points on a scale of 0-10.

Adolescents' and parents' experience of the treatment (Question 4)

The most frequent themes emerging from adolescents' open-ended descriptions of how they perceived the treatment and its suitability for themselves were: 1. the treatment was suitable for me overall ($n = 4$), 2. the treatment helped me to come out of my comfort zone ($n = 4$), and 3. coming to the sessions was important for me ($n = 3$).

The most frequent themes emerging from parents' descriptions of how they perceived the treatment and its suitability were: 1. the treatment was suitable overall ($n = 5$), 2. behavioural experiments and practices were suitable ($n = 3$), and 3. small group format was suitable ($n = 3$).

Referral process from the school (Question 5)

Adolescents' general perception of the referral process from the school to treatment was moderately good, mean of the ratings was 7.1 ($SD = 2.6$) on a scale of 0-10. Parents' general perception of the referral process was excellent, mean of their ratings was 9.8 ($SD = 0.4$) on a scale of 0-10. Adolescents perceived the fluency of the referral process as good, mean of the ratings was 7.9 ($SD = 2.5$) on a scale of 0-10. The parents rated the fluency of the referral process as excellent, mean of their ratings was 9.8 ($SD = 0.4$) on a scale of 0-10.

Eight out of ten (80%) adolescents suggested changes or improvements regarding the referral process. The most frequent comment made by the adolescents was that more information about the treatment could have been given ($n = 4$). All parents were pleased with the referral process, and none suggested changes.

Experiences of assessment in the school and at the university (Q6 and Q7)

Adolescents rated assessment of social anxiety and treatment suitability in the school as good, mean of the ratings was 7.92 ($SD = 1.5$) on a scale of 0-10. They also rated the clinical assessment at the university as good, mean of ratings was 8.44 ($SD = 1.3$) on a scale of 0-10. Parents rated assessment of social anxiety and related issues in the school as excellent, mean was 9.2 ($SD = 0.8$), and clinical assessment at the university was also rated as excellent 9.2 ($SD = 0.6$) both on a scale of 0-10.

The treatment's completion rate was 100%. Session attendance rate was 94%. Due to the ongoing COVID-19 pandemic, we offered a possibility for selected remote

sessions when needed. Two participants attended remotely for one group session. In other cases of absence ($n = 6$), compensatory individual sessions were conducted, either remotely or at the university.

4. DISCUSSION

Results from this pilot case series show that using a detection toolkit and professional operating model, with school psychologists as consultants and coordinators in their respective schools, resulted in relatively accurate detection of SAD and treatment suitability in the school. Of adolescents who were referred to treatment, 71% had clinical SAD and completed the DOCT-SAD treatment. Regarding evaluation of clinical benefits of the DOCT-SAD, 60% of adolescents reached remission according to SPIN, also 60% were free of their primary SAD diagnosis post-treatment, implying it holds promise as a treatment model for adolescent SAD and merits further development and controlled studies with larger samples. The DOCT-SAD was feasible for adolescents and their parents as shown by high treatment completion and session attendance rates, and good ratings for the treatment.

School-based detection of SAD and suitability for the treatment.

Our findings showed a relatively encouraging rate of SAD detection and treatment suitability accuracy was obtained by using the SAD detection toolkit and the professional operating model in the school. Of the 14 referred adolescents, researchers' telephone check identified two who were not eligible, and finally ten (71%) of the referred received a clinical diagnosis of SAD, started the treatment, and completed it. This result is similar to that of Sweeney's (39) detection rate of SAD in schools. They screened pupils with self-report measures or alternatively using teachers and school counsellors as nominators for the treatment, which was followed by a phone screening. Similar to our screening protocol, the researchers conducted a two-step screening process; first, via telephone and second, face-to-face, in order to confirm the diagnosis for SAD and to hear the parents' perspective. In an earlier school-based study, six out of eleven (55%) adolescents referred to diagnostic interview by teachers, who had been given a 1-day workshop on social anxiety, met the diagnostic criteria for SAD (65).

As we assessed not only detection of SAD, but also suitability and treatment completion, it appears that relatively

good accuracy rates can be reached with coordinated efforts in the SHWS, using brief detection tools, brief training for them and electronic distribution of materials.

Symptom reduction in primary outcome measures.

Symptoms of SAD decreased significantly, as also found in other similar studies (66). Average effect sizes for pre-post design regarding adolescent social anxiety symptoms has been around 0.86-0.99 (67,22). However, when analysed for type of treatment setting, effect sizes for school interventions ($g = 1.55$) seem to be higher than clinical treatments ($g = 0.67$) (22). The effect size in this study was comparable to that found by Scaini (22).

The 60% diagnostic remission rate seems comparable to disorder-specific CBT treatments for SAD (66) and seems better related to transdiagnostic treatments: 33% found by Hudson and colleagues (68), and 35% found by Evans and colleagues (24). In DOCT-SAD, all four adolescents who did not reach diagnostic remission had at least one comorbid anxiety or depressive disorder that persisted post-treatment. This finding, that comorbidity in SAD is associated with worse treatment outcome in adolescents, is in line with other studies (69,70).

Other outcome measures.

Interestingly, depressive symptoms also decreased, even though the treatment was specifically targeted to treat SAD. This observation has also been made by Rozen and Aderka (71) and Yang and colleagues (66) in their meta-analyses. This might be due to the behavioural activation that occurred in the treatment. Behavioural activation is often used to treat adolescents with depression (72). In addition, depressive symptoms can emerge from the increased isolation and withdrawal due to SAD and can reduce when the symptoms of SAD subside (71). In this study, one of the participants with pre-treatment depressive disorder no longer met the criteria for a depressive disorder post-treatment.

Feasibility.

Both the high completion rate (100%) and session attendance rate (94%) illustrate good feasibility and acceptability of the DOCT-SAD for adolescents. Parent ratings and verbal reports also indicate a good feasibility and acceptability for this treatment model. The feasibility results are comparable to results found in studies examining the feasibility of the related CT-SAD-A treatment model for adolescents (32,43). Whilst the session attendance rate was good, there were still some absences from singular sessions. Most of these

absences were due to illness, and we found that having flexible options for participating remotely increased the attendance rate.

Adolescents and their parents reported good to excellent wellbeing after the intervention, which was accordant with the pre- and post-treatment YP-CORE changes. The developmentally oriented DOCT-SAD treatment model was described by adolescents as suitable for them, and their parents also reported good suitability of the treatment. In their reports, adolescents mainly gave positive feedback on the methods used in the group and individual sessions, while the parents mainly noted frequent, positive behavioural changes in their children.

Our results need to be evaluated in the light of several limitations. First, results are based on a case series of ten adolescents. Without comparison to a control group, conclusions on the treatment's effectiveness cannot be made. It is possible that the symptom reduction would have occurred without the treatment. Second, participants were mainly female, limiting the generalizability of results to males. Third, the diagnostic assessments were not conducted by independent assessors. Last, this study did not include follow-up assessment.

This study reports results from a feasibility study of a developmentally oriented treatment for adolescent SAD. The treatment was thoroughly adapted for this age group and SAD as it presents among adolescents. The school detection toolkit and professional operating model was agreed with collaboration between the research group and SHWS representatives, which adds ecological validity and informs on factors which may be relevant when implementing treatments to a school context in the future. The symptom measures used were validated for use among adolescents. The use of a self-assessment measure of SAD as the primary outcome measure was based on the decision to stress the adolescent point of view. Diagnostic interviews were conducted using a validated method of assessing SAD symptom severity in this age group, and both adolescents and their parents were used as informants.

Conclusions.

This study indicates that both adolescent SAD and suitability for brief psychotherapy can be identified relatively well in schools. Results further indicate that DOCT-SAD holds promise as a treatment for adolescent SAD: it is feasible for adolescents and their parents, it associates with symptom reduction and diagnostic change and seems to be applicable in the context of Finnish

services. Use of the detection toolkit required no lengthy training. The professional operating model for detection and referral led to a smooth referral to treatment, and could be examined in future studies as a model of coordinated mental health work in SHWS. DOCT-SAD, provided by graduate master's level students with a major in psychology without extensive clinical experience, suggests a model that might be well suited for training and used by professionals with a mental health background, but it remains to be seen in future studies how much training and how frequent clinical supervision would be needed in order to train other professional groups for its use.

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