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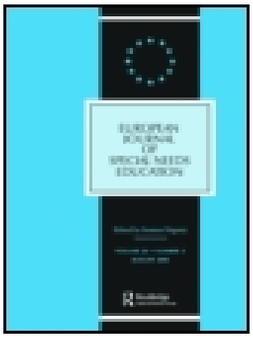

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Implementation of the inclusive CICO Plus intervention for pupils at risk of severe behaviour problems in SWPBS schools

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ABSTRACT

Check in–check out (CICO) is a widely used and studied behavioural intervention. Although CICO is an effective way to support pupils' behaviour in a school context, not all pupils benefit from basic CICO. A single-case experimental study was designed to evaluate the effects of CICO Plus support (CICO Plus) for participants whose behaviour was determined to be non-responsive to basic CICO. CICO Plus was planned and implemented with four pupils identified by school CICO teams as needing additional behavioural support. Individual CICO Plus support was planned by multiprofessional teams working on each pupil's case. The CICO Plus support was based on teaching social skills and behaviour at least three times a week in collaboration with families, schools and social and health care services. A concurrent multiple baseline design revealed increases in pupils' appropriate behaviour in their targeted behavioural goals and decreases on pupils' disruptive behaviour in school situations. Fidelity of the CICO Plus intervention and social validity among school personnel were also assessed. Results indicated that practical multiprofessional co-operation is essential to lay the groundwork for inclusive support for pupils at risk of severe problem behaviour.

KEYWORDS

Positive behaviour support; social skills; check in check out; behavioural interventions; multi-tiered support systems

Introduction

The broad definition of positive behaviour support (PBS) includes the use of research-based assessment and interventions to prevent the occurrence of problem behaviour along with respect for a person's dignity and overall wellbeing (Carr et al. 2002; Kincaid et al. 2016). School-wide positive behaviour support (SWPBS) refers to schools that are committed to using a comprehensive PBS approach to meet the needs of all pupils (Kincaid et al. 2016). When a school has adopted this approach in its values and practices, there seems to be less need for exclusionary disciplinary practices (Bradshaw, Mitchell, and Leaf 2010). The SWPBS approach includes school-wide and individual interventions at three levels of support (universal, targeted and intensive) to improve socially valued outcomes in the school (Horner, Sugai, and Anderson 2010). Connecting the multi-tiered support in SWPBS can be especially beneficial to address the social–emotional needs of pupils. At the same time, it is important to pay attention to school staff's involvement in increasing the school's capacity to sustain SWPBS implementation (Bunch-

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Crump and Lo 2017). With multiprofessional co-operation and the use of research-based programmes, schools can develop their inclusive education (Mitchell, Adamson, and Kenna 2017).

Pupils who find universal support inadequate need additional support. In SWPBS schools, secondary-level interventions are usually research-based standardised interventions or group-based programmes for practising certain specific skills (Horner, Sugai, and Anderson 2010). Check in check out (CICO) is one of the most studied secondary interventions in SWPBS schools to support pupil's prosocial behaviour (Drevon, Hixson, and Wyse 2018; Hawken et al. 2014; Maggin et al. 2015; Mitchell, Adamson, and Kenna 2017). Core principles of CICO support include clearly defined behavioural expectations, pre-corrections for meeting these expectations, regular positive feedback for the demonstration of appropriate behaviour, use of data-based decision making and a daily system for home–school communication (Crone, Hawken, and Horner 2010). However, standardised CICO support does not result in improved behaviour in all cases, and as many as 22% of pupils do not benefit from standardised CICO (Majeika et al. 2020). Therefore, for schools to meet the challenge of developing inclusive education for all, more intensive support services are needed to manage and influence multiple aspects of behavioural problems.

Pupils differ in their self-regulatory capabilities, and according to the cognitive-oriented view, behavioural problems may be associated with neurocognitive and self-regulatory problems such as impulsiveness (Barkley 1997) and deficits in emotional control (Blair and Diamond 2008). Pupils with poor regulatory capabilities can show information processing deficits and problems in the adaptation of their behaviour to meet situational expectations (Lochman et al. 2012; Lemerise and Arsenio 2000). Overlapping of regulatory and behavioural problems seems to be prevalent, especially among children with more severe conduct problems (Smith, Lochman, and Daunic 2005). Behavioural management treatments like CICO involve adults to modify contingencies in the target environment but do not directly train pupils' social skill sets. There is growing evidence that the incorporation of behavioural methods with skill training interventions is beneficial for children with regulatory problems (DuPaul, Eckert, and Vilardo 2012; Evans, Owens, and Bunford 2014; Paananen et al. 2018). Following the idea of training interventions, in this study, CICO intervention was intensified by combining it with regulatory and social skill practices aiming to improve the skill sets of the pupils and enable behavioural change together with regular feedback systems.

This study aims to present an adapted version of CICO support that combines individualised daily report card (DRC) goals, additional social skills training and school-level co-operation between CICO coaches, class teachers, special education teachers and school welfare professionals in multiprofessional teams. We also report the preliminary results of the adapted CICO intervention.

Check in check out support to teach social behaviour

Social behaviour skills in the school context refer to pupils' necessary abilities to perform competently or successfully in everyday social school situations (e.g. being able to learn in a group, entering an ongoing play group, greeting peers in the morning, asking for adults' permission to do something, etc.). Support for pupils with persistent behaviour problems should not only target disruptive and impulsive behaviour but also aim to teach behaviours

and build skills necessary for pupils to function sufficiently in everyday school settings (Abikoff 2009; Fuchs, Fuchs, and Malone 2017). With CICO support, pupils use DRCs to increase scheduled immediate positive feedback linked to classroom settings and behavioural goals. In previous research (Drevon, Hixson, and Wyse 2018; Hawken et al. 2014; Karhu, Närhi, and Savolainen 2019; Maggin et al. 2015), CICO support has been considered effective, socially approved and feasible for many schools in different schooling systems to implement with high fidelity. During CICO support, adult attention is increased with daily meetings and positive teacher attention during lessons (Crone, Hawken, and Horner 2010). CICO support rests on the relationship and interaction between the CICO coach and the pupil along with an exact definition of behavioural expectations and positive reinforcement. To support with fidelity, schools must first form a CICO team (Crone, Hawken, and Horner 2010; Karhu, Paananen, and Närhi 2017). In Finland, these CICO teams usually include the class teacher, a CICO coach and a special education teacher. The school CICO team needs to work in collaboration with the larger SWPBS leadership team to ensure that support services at all levels are based on the same behavioural expectations (Crone, Hawken, and Horner 2010) and are consistent across the school.

CICO support can also be modified in many further ways to better fit non-responsive pupils (Bundock et al. 2020). The common way to further modify CICO support is to determine the function of the problem behaviour and to use this information for individual modification (Klingbeil, Dart, and Schramm 2019; McIntosh et al. 2009). By using the skills and knowledge of behavioural analysts, the results of function-modified versions of CICO support have been promising (Drevon, Hixson, and Wyse 2018). However, functional behavioural assessment (FBA)-based modifications are not feasible in school contexts where behavioural analysts are not available. The CICO team can also modify CICO according to pupils' needs and, if necessary, add research-based components to strengthen the intervention's effects (Bundock et al. 2020). Additional coaching resources are an essential element in the Check, Connect and Expect programme, where additional social skills teaching meetings are added to a pupil's schedule several times a week (Cheney et al. 2010). In this way, CICO does not need to be replaced with another intervention, but social skills training intervention can be layered into CICO.

Intensified CICO Plus support for CICO non-responders

In this study CICO support was enhanced with the CICO Plus training component that aims to improve pupils' functioning at school. The CICO Plus programme was implemented in Finnish SWPBS schools as a continuum of support for CICO non-responders. The CICO Plus program maintained the core features of the standardised CICO and included additional skills training practices that were conducted regularly during school hours. Implementation of the intervention followed the typical local procedures of intensifying support in accordance with the three-tiered support system in Finnish schools. Skills training focused on CICO non-responders to support pupils' functioning in school, particularly in those social situations where they had evidenced dysfunction. Since one of the most persistent weaknesses of social skills teaching is the failure to generalise and maintain newly taught social skills (Gresham, Sugai, and Horner 2001), the supportive intervention was implemented in contexts where problems arise and interfere with daily functioning (Abikoff 2009; Chronis, Jones, and Raggi 2006; DuPaul, Eckert, and Vilardo 2012).

During the CICO Plus programme, daily CICO routines continued so that pupils (a) checked in with a designated CICO coach (school staff member) in the morning; (b) obtained feedback on target behaviour throughout the day from teachers; (c) checked out with the same school staff member before leaving school; (d) took DRCs home for their parents/legal guardians to review and discuss daily success; and (e) returned the DRCs back to school the next day (Crone, Hawken, and Horner 2010). The additional CICO Plus training component was planned for three times a week for a minimum of five weeks.

The CICO Plus programme draws on findings that problem behaviour can be reduced and prosocial behaviour increased through cognitively-based skills instruction and problem-solving skills training (Cheney et al. 2010; Kazdin et al. 1989; Kendal 2012). The problem-solving component comprised practices on encoding and interpreting social cues, consequential thinking, taking the perspective of others to manage social situations with peers and teachers and generating alternative solutions (Crick and Dodge 1994; Kazdin et al. 1989). The participating pupils were active agents and involved in all phases of the intervention process (i.e. self-assessment, planning and implementation). CICO Plus support relies on positive and caring adults who can provide positive feedback and structured supervision.

Rationale of the study

Previous research shows that further research is needed to identify effective ways to support pupils with severe behavioural problems and cognitive skills deficits in SWPBS schools (Bunch-Crump and Lo 2017; Maggin et al. 2015). The CICO Plus programme aims to improve pupils' behaviour control, social information processing and social problem-solving skills. In this study, a concurrent multiple-baseline design was used to evaluate the implementation of the CICO Plus intervention, particularly the intervention's effectiveness and social validity in an SWPBS multi-tiered framework. The major research questions posed were as follows:

Research Question 1: What are the effects of the CICO Plus programme on CICO non-responsive pupils' problem behaviour and appropriate behaviour?

Research Question 2: Is the CICO Plus programme a socially valid approach in Finnish primary schools?

Methods

Setting and participants

The study was conducted in two Finnish primary schools with just over 300 pupils in each. School A was an ordinary Finnish school serving pupils from pre-primary education through sixth grade. School B was a Finnish school atypical in its explicit commitment to inclusion. In school B, pupils of each age cohort studied in a class of 30–45 pupils, where one of the teachers was a special education teacher and all classes had teaching assistance. In school B, there were a few special education classes through ninth grade (aged 6–16) for pupils with severe disabilities. By the time of the study, both schools had been implementing school-wide behavioural support for over four years. The schools had established SWPBS leadership teams to ensure desirable social outcomes for pupils, to use

evidence-based practices and to commit to data-based decision making (Sugai and Horner 2009). The basic components of SWPBS universal-level support in both schools included commonly defined and taught behavioural expectations and agreement among adults to use positive feedback to encourage appropriate social behaviour. The schools had high-quality universal level procedures to support pupils' prosocial behaviour. Procedures with CICO support (Crone, Hawken, and Horner 2010) were also in place, but additional support for pupils who did not benefit from CICO was not formalised

The researcher contacted the schools' principals and CICO teams, explained the study and asked them to refer pupils for whom they evaluated CICO support as likely to be inadequate for them to begin receiving CICO support through this study. The school CICO teams functioned in accordance with the schools' regular practices and referred 12 pupils, for whom the CICO phase was initiated. The school CICO teams evaluated the progress of all 12 pupils every other week or once every three weeks, discussing it with the teachers and using DRCs. The CICO teams determined that eight pupils met the criteria of acceptable progress; therefore, only four pupils proceeded to the CICO Plus phase and became participants in this study. Jonah was from school A, and the remaining pupils (Kevin, Joe and Rick) were from school B. Kevin and Joe werein the same class.

Jonah was 12 years old and in the sixth grade, and he had been diagnosed with attention deficit hyperactivity disorder combined type (ADHD-C) at a university hospital clinic. Jonah had problems concentrating during lessons, especially in English lessons, and he often ended up in conflicts with classmates.

Kevin was eight years old and in the second grade, and he had no diagnosis. Kevin had problems following adult instructions and tolerating failures. He also had trouble using proper language. During lessons, he spent a lot of time talking to classmates and often refused to do the assigned task.

Joe was eight years old and in the second grade, and he had no diagnosis. Joe had constant difficulties obeying adult instructions during school days, staying seated and doing the assigned tasks during lessons.

Rick was 10 years old and in the fourth grade, and he had been diagnosed with ADHD-C at a university hospital clinic. Rick had constant problems waiting his turn, e.g. washing hands and standing in line for school dinner. When adults instructed Rick, he often lost his temper and used improper language.

The pupils were selected based on the following criteria: (a) the pupil had participated in the CICO intervention for at least three weeks; (b) the pupil had demonstrated inconsistent or lower than expected progress in meeting daily DRC goals; (c) the school's CICO team had concluded that CICO support was inadequate; and (d) the pupil and the pupil's legal guardians consented to participating in the study.

Procedure

When pupil support is individualised, school welfare professionals, such as school psychologists, become part of pupils' support teams, and Finnish legislation requires that parents give their approval to gather official multiprofessional teams. In this study, the multiprofessional teams included the class teacher, the special education teacher, a CICO Plus coach and school psychologists, and they had active roles in the process of assessing and planning the pupils' behaviour support plans for the CICO Plus phase. The researchers

(authors one and two) trained the multiprofessional teams for two six-hour training sessions before starting the CICO Plus programme. The multiprofessional teams made a comprehensive behaviour assessment and determined the quality and occurrence of the pupils' problem behaviour, and this information was used to develop each pupil's individual behavioural support plan. In addition, the multiprofessional teams had consultative support from the researchers once a month throughout the CICO Plus implementation period.

The comprehensive behaviour assessment was not a formal FBA. However, the central elements of FBA were utilised in the three sections of the comprehensive behaviour assessment. First, a special education teacher interviewed the classroom teacher with a modified version of the Assessment Checklist for Teachers and Staff (March and Horner 2002) to identify the behaviours of concern, their antecedents and the maintaining consequences. Second, the CICO Plus coaches observed pupils in their most problematic activities identified during the teacher interview. Third, the CICO Plus coaches interviewed the pupils and their parents for their impressions and interpretations of behaviours of concern. The CICO Plus coaches interviewed the pupils to get their self-assessment about social functioning at school. The parents were also involved: the goals of support and their role in supporting their child at home were explained. The information from the interviews and observations was collaboratively used by the multiprofessional team to develop the specific goals in pupils' individual plans for CICO Plus support.

The CICO Plus programme was targeted to improve the skills of interpreting social cues and social reasoning and finally to teach situational appropriate responses. Each intervention was individually tailored to address the pupil's needs, and outcomes were expected to be seen as behavioural change. For Jonah the intervention was expected to result in improved self-control and social reasoning to get information on how social encounters are proceeding and reduce social conflicts; for Kevin the expectations were improved adherence to adult instructions and toleration of failures; for Joe improved adherence to adult instructions and avoidance of trouble; and for Rick, improved adherence to adult instructions and speaking politely.

During the CICO Plus programme, pupils had additional meetings with a CICO Plus coach in the middle of the school day. The schools were instructed to schedule these meetings on at least three different days a week. During these meetings, pupils received feedback on their progress in achieving their individualised CICO goals and practised their social skills with a CICO Plus coach. The CICO Plus coach helped pupils set goals for their Plus sessions and provided reinforcement when pupils achieved their individualised goals. Coaches also spent time interacting with the pupils and providing them with feedback on their social progress. The skills training aimed to improve the pupil's situational behaviours. Every meeting had a clear structure: (1) feedback based on the DRC; (2) explicit goal setting for a meeting (agreement on the practised skill and behaviour); (3) social reasoning and adult-led modelling of the behaviour; (4) practice and feedback; and (5) a 'homework' component that included individually planned support for transfer effect. Decisions about intervention length were made based on DRC points, although multiprofessional teams also comprehensively evaluated the pupil's social functioning in various school situations. The multiprofessional teams made suggestions about the duration of the CICO Plus phase. The CICO Plus phase lasted between six and eight weeks.

Design and data analysis

A concurrent multiple-baseline design across participants was used to analyse the effectiveness of the CICO Plus programme for CICO non-responders. Concurrent multiple-baseline design makes it possible to verify vertical analysis of participants without threats, such as changes in the school environment in the following semesters (Carr 2005; Coon and Rapp 2017). In this case study, careful planning of data collection (Wolery 2013) of the four cases was considered to provide sufficient data to describe the usefulness and effectiveness of CICO Plus support in the Finnish school context. Collection of all the baseline data began in the same week in the beginning of the fall semester. The short baseline was a 'treatment-as-usual' period in the schools.

The CICO phases were implemented in schools with high fidelity. The mean percentage of the main elements of the CICO support (occurrence of check in and check out meetings, use of DRC and the home component) was 87.8% for Jonah, 100% for Kevin, 98.1% for Joe and 94.4% for Rick. Pupils entered the CICO Plus phase if their DRC percentages were consistently below 80%, and the CICO team evaluated that the pupil would benefit from CICO Plus support. The CICO Plus programme was implemented by schools' social workers or experienced pedagogical assistants who were trained to operate as CICO Plus coaches. In this study, the generalisation of new cognitive skills was monitored in the maintenance phases. Monitoring included measuring pupils' functioning in various school situations after the CICO and CICO Plus intervention were terminated.

Visual analysis is recommended in single case studies to determine whether the changes in pupils' behaviour are caused by the intervention and whether these conclusions are reliable (Cohen et al. 2014; Kratochwill et al. 2013). Visual analysis also offers the possibility to review the immediacy and magnitude of the intervention effects (Horner, 2005; Kratochwill et al. 2013). Analysis itself refers to exploring the graphical data utilising the standards that have been developed to reduce subjectivity (Cohen et al. 2014; Kratochwill et al. 2013; Wolery 2013). In this study, the pupils' behavioural level, trend and variability were analysed in the baseline, intervention and maintenance phases.

Measures

DRC data for all participants were collected during the baseline and intervention phases. DRCs included the list of the pupil's individualised expectations (e.g. 'obey adult instructions' or 'use proper language'), and teachers rated the pupil's behaviour after every lesson, as follows: 0 = did not meet the expectation; 1 = somewhat met the expectation; or 2 = met the expectation. The weekly average rates of DRC data were used in visual analysis to make it easier to compare the DRC data and the school situation questionnaires (SSQ; Barkley and Edelbrock 1987). Before averaging the DRC data, the researcher made sure that it did not obscure important characteristics of the data such as trend or variability.

The teachers completed SSQs weekly to evaluate the severity of pupils' behavioural problems in different school situations. The SSQ was used to measure overall problem behaviour, since the purpose of the CICO Plus programme was to support social behaviour that would be generalised in various school situations. The SSQ describes 12 situations, and teachers rated the severity of the problems on a Likert-type scale ranging from 0 (no problems) to 9 (severe). The mean of all 12 items was used as the overall SSQ score.

Treatment fidelity data were collected from each CICO Plus meeting. The CICO Plus coaches self-evaluated each CICO Plus meeting using a checklist that included the five steps of the meeting: orientation, problem-solving, modelling, practising and homework. Treatment fidelity was computed as the percentage of the steps completed.

Interobserver agreement was used to evaluate the reliability of the self-evaluations. Researchers and one trained CICO Plus coach observed and evaluated one or two meetings with every pupil during the CICO Plus phase. Interobserver agreement was calculated between the CICO Plus coaches' self-evaluation and the external observations. Interobserver agreement was 60% for Jonah, 90% for Kevin, 70% for Joe and 90% for Rick. Unfortunately, Jonah's CICO Plus coach filled in his diary very rarely, so the interobserver agreement was calculated for only one meeting. Because of the low level of interobserver agreement for Jonah's CICO Plus meetings, one of the meetings was recorded, and outside fidelity observers assessed that this meeting's fidelity was 77.50%.

The Intervention Rating Profile (IRP-15) was used to collect social validity assessments from the CICO Plus coaches (Lane et al. 2009), who rated their perceptions of the CICO Plus programme on 15 statements. The Behaviour Education Programme (BEP) Acceptability Questionnaire (Hawken and Horner 2003) was used to assess social validity among teachers. The teachers answered whether they perceived the CICO Plus programme (a) to decrease problem behaviour at school; (b) to increase appropriate behaviour at school; (c) to be easy to implement; (d) to be worth the effort required to implement; and (e) to be worth recommending to others. A Likert-type scale ranging from 1 (totally disagree) to 6 (totally agree) was used for both social validity measures.

Results

Figure 1 displays the overall problem behaviour results in all school situations measured weekly with the SSQ across the intervention phases (baseline, CICO, CICO Plus and maintenance). Figure 2 displays the results of the DRC points showing the change in the pupils' appropriate behaviour during the CICO and CICO Plus phases.

Jonah displayed during the baseline and the CICO phases moderate-level problem behaviour (mean 4.6) with some variability (range 5.7–3.86) and a slightly downward trend. His overall problem behaviour decreased during the CICO Plus phase (mean 3.14) with some variability (range 4.79–1.07). In the CICO Plus phase, the trend was clearly descending. Jonah displayed low-level problem behaviour in the maintenance phase (mean 1.64) with some variability (range 2.29–1.00).

Kevin displayed during the baseline and the CICO phases moderate- to high-level problem behaviour (mean 5.99) with high variability (range 6.79–4.43), and the trend was slightly descending. His overall problem behaviour decreased during the CICO Plus phase (mean 4.04) with some little variability (range 5.29–3.57). Kevin displayed moderate-level problem behaviour in the maintenance phase (mean 3.68) with some variability (range 4.21–3.14). There was no obvious trend during the CICO Plus or maintenance phases.

Joe displayed during the baseline and the CICO support phases high-level problem behaviour (mean 6.56) with little variability (range 7.57–6.00) and no trend. His overall problem behaviour stayed at the same level during the CICO Plus phase (mean 6.60), and variability was moderate (range 6.93–5.57). After the last CICO Plus session Joe did not continue CICO support because the intervention was clearly not effective for him. During

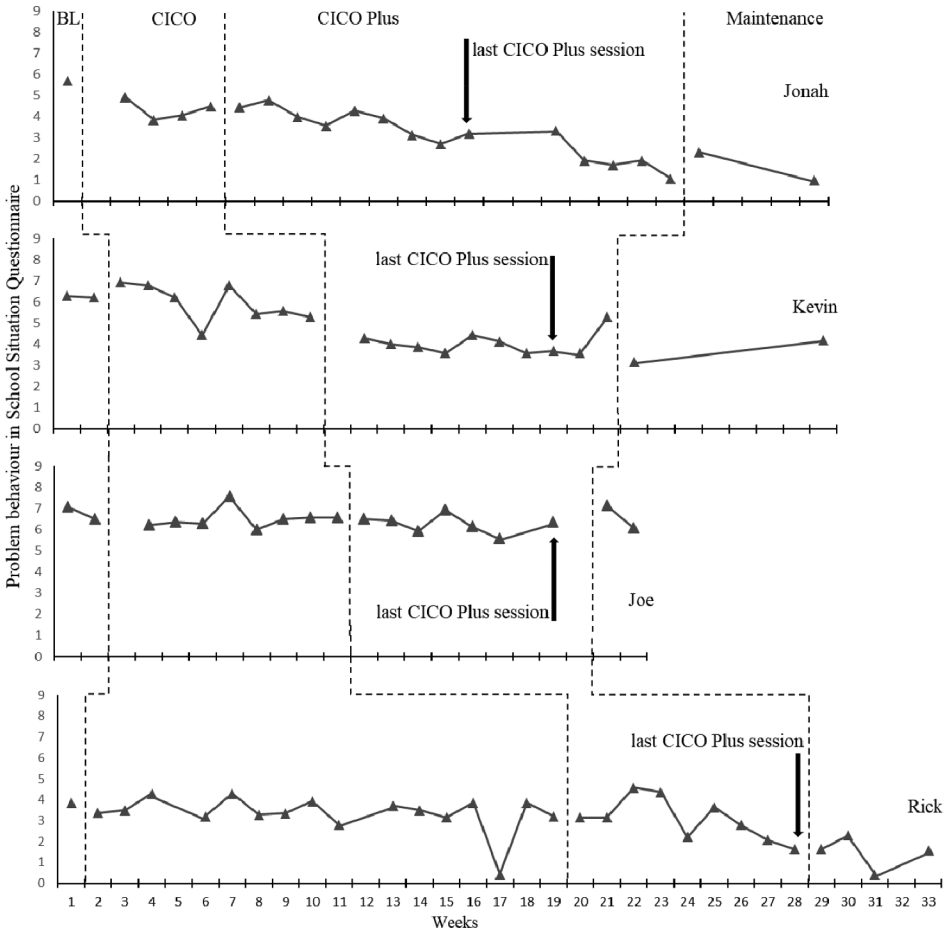

Figure 1. CICO Plus intervention results as measured by SSQ.

the short maintenance phase, Joe displayed equally high-level problem behaviour in overall school situations (mean 6.63).

Rick displayed during the baseline and the CICO phases moderate problem behaviour (mean 3.37) with high variability (range 4.28–0.42) with no obvious trend. His overall problem behaviour decreased during the CICO Plus phase (mean 3.06) with some variability (range 4.57–1.64). Rick did not shift back to the CICO phase at the end of the semester. Although no significant change in level or trend was measured with the introduction of CICO Plus for five weeks, during the last three weeks there was a clear downward trend. In the maintenance phase, Rick's overall problem behaviour continued to decrease (mean 1.48) with some variability (range 2.28–0.42).

Jonah's DRC ratings of appropriate behaviour during the CICO phase averaged 64.39% (range 58.40%–75.0%) with a slightly downward trend. The DRC ratings in the CICO Plus phase revealed slightly upward trends, and the ratings were 22.00% higher than in the CICO phase with an average rating of 78.55% (range 71.5%–93.00%). The DRC ratings stayed at a high level even when Jonah returned to basic CICO.

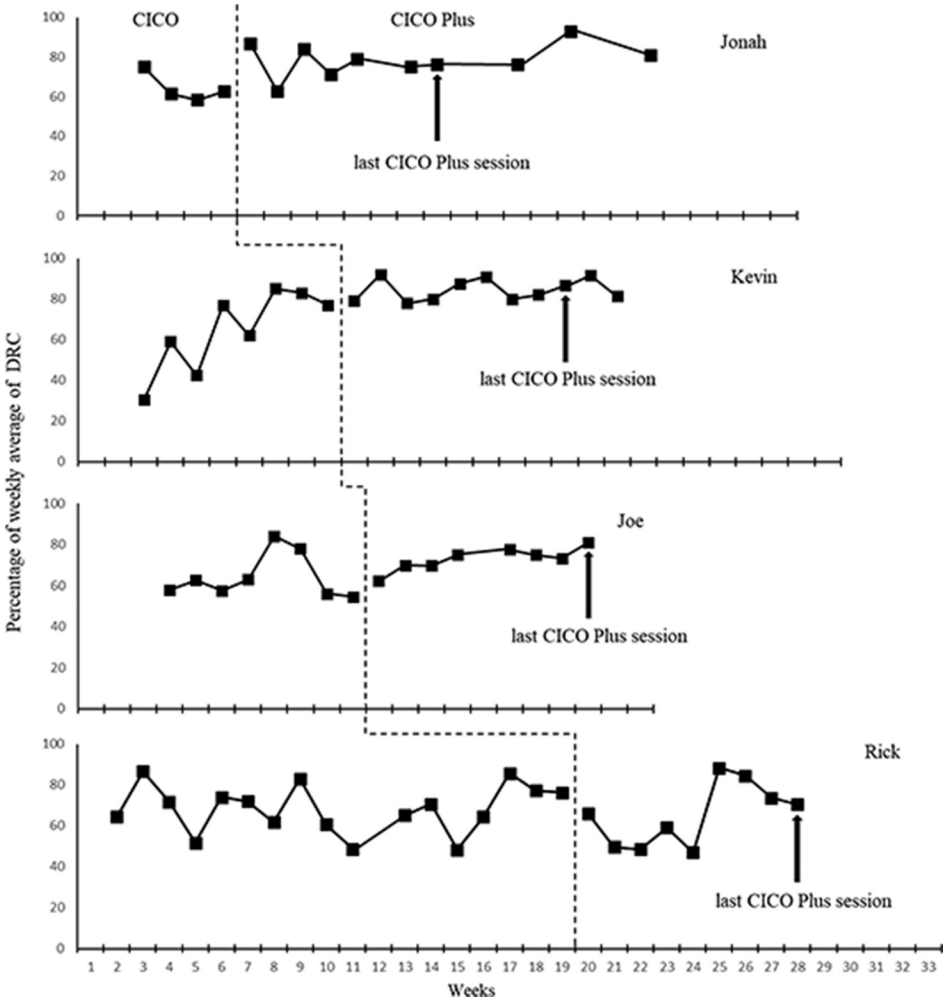

Figure 2. CICO Plus intervention results as measured by DRC.

Kevin's DRC ratings during the CICO phase averaged 64.49% (range 42.50%–85.00%), and the ratings had a clear upward trend. The DRC ratings in the CICO Plus phase were 30.91% higher than in the CICO phase with an average rating of 84.42% (range 78.00%–92.00%). A positive trend continued throughout all the intervention. The DRC ratings were also at a high level when Kevin returned to basic CICO.

Joe's DRC ratings during the CICO phase averaged 64.49% (range 42.50%–85.0%) with no trend. The DRC ratings in the CICO Plus phase were 30.29% higher than in the CICO phase with an average rating of 84.02% (range 78.00%–92.00%), and the trend was upwards. Joe did not return to basic CICO.

Rick's DRC ratings during the long CICO phase averaged 68.29% (range 48.33%–86.60%) with no trend. The DRC ratings in the CICO Plus phase were at about the same level as in the CICO phase with an average rating of 64.16% (range 47.00%–88.25%). The trend was upwards, but the ratings were highly variable. Rick did not return to basic CICO.

Fidelity

The fidelity of CICO support during the CICO Plus phase was highly variable. For Jonah, the home component practically ended after the third week. The fidelity of the three basic elements conducted at school (check in and check out meetings and the use of DRC) was 63.75% for Jonah in school A. In school B, the fidelity of CICO support stayed at a high level during the long CICO Plus programme. The mean fidelity was 98.11% for Kevin, 93.13% for Joe and 88.25% for Rick.

The CICO Plus programme lasted 9 weeks (13 sessions) for Jonah, 7 weeks (16 sessions) for Kevin, 9 weeks (16 sessions) for Joe and 8 weeks (18 sessions) for Rick. The average length of a CICO Plus meeting was 27.05 min (range 10 min–40 min). According to the CICO Plus coaches' self-evaluations, 76% (range 20%–100%) of the meetings included all five steps.

Social validity

On a scale of 15 to 90 (90 indicating the highest acceptance of the intervention), the four CICO Plus coaches rated the acceptability of the intervention as a mean of 81.5 (range 79–83). All the CICO Plus coaches agreed or strongly agreed with all 15 items on the questionnaire, indicating that they found the programme an acceptable way to support pupils' behaviour in school. For the BEP ratings filled in by the teachers, the overall mean score was 4.2 on a scale of 1–6 (6 indicating the highest acceptance of the intervention). This shows that teachers found the CICO Plus programme to be an acceptable support for pupils.

Discussion

This study provides initial evidence of the effectiveness and social validity of CICO Plus support in the Finnish context but must be interpreted with caution, as basic effects were not shown consistently in the two outcome measures at the three different time points. However, both Jonah's and Kevin's behaviour improved in keeping with their individually planned behavioural goals. At the same time, with these improvements their problem behaviour reduced in overall school situations. It seems that improvements in pupils' individual goals can be reflected in pupils' overall behaviour in everyday school situations. These improvements were achieved through careful assessment, individual planning and a pre-planned intervention protocol.

These preliminary results of the effects of the CICO Plus programme suggest that the programme may take time to produce sufficient fluency and to develop breadth of cognitive skills. Both Rick's and Jonah's data suggest a delayed effect, which may be consistent with a cognitive skills training intervention (Evans, Owens, and Bunford 2014). On the basis of these results, we can argue that Joe may have needed a longer intervention period, and lack of time may also be why Joe's improved behaviour was not reflected in overall school situations. Joe's improvements were evident in his DRC ratings but less so in overall school situations. In summary, all pupils in this study made some progress in reducing their problem behaviour and increasing their appropriate behaviour during the CICO Plus support phase.

This study also aimed to determine whether operating multiprofessional CICO Plus support in the SWPBS context was a socially acceptable way to support pupils in inclusive schools. CICO Plus support was implemented with good fidelity, and both teachers and CICO Plus coaches found the intervention to be an adequate way to support pupils. Basic behavioural principles laid the groundwork for the practical and functional CICO Plus support intervention in clinical conditions (Kazdin 2013). Thus, employing the basics of modern behavioural psychology is justified when planning a behavioural intervention. In this study, these basics were used to observe, assess and support behaviour in a school setting, and the intervention also utilised cognitive models of learning. This study's results provide a theoretical and practical base for practitioners and researchers in the complex and little-studied phenomenon of inclusive education of pupils with severe problem behaviour. These promising results for arranging individual and intensive support in school settings for pupils at risk of severe problem behaviours suggest there might be worthwhile new ways for school psychologists to work more collaboratively with pedagogical staff in organising support services (Maggin et al. 2015). Currently, promotion and prevention do not play an essential role in school psychologists' work, and more in-service training is needed (Ahtola and Niemi 2014). This change in school psychologists' working culture (Ahtola and Niemi 2014; Bayat, Mindes, and Covitt 2010) could be pivotal when planning and organising support for pupils at risk of severe behaviour problems in inclusive schools. The research group and professionals from Finnish SWPBS schools developed a CICO Plus programme on the basis of evidence-based elements of training interventions (Evans, Owens, and Bunford 2014), and it was piloted here using a multiple-baseline single-case experimental study design. While the research was not able to show conclusive evidence of the effectiveness of a CICO Plus intervention in the Finnish context, we believe that this study shows important evidence for the empirical value of enhancing CICO support with individualised goals and training and thus lays groundwork for forthcoming controlled trials (Schlosser and Sigafoos 2008) in other European contexts.

Limitations

This study has some limitations. First, only indirect behavioural measures were used and more accurate data could have been gathered through direct observations of behaviour in actual situations.

The second limitation surrounds the fidelity of the CICO Plus meetings that were assessed using the CICO Plus coaches' own ratings. The reliability of these self-ratings was assessed only once or twice during the intervention. In Jonah's case, this was particularly problematic because his CICO Plus coach did not systematically fill in his diary.

The third limitation concerns the extent to which the social validity was evaluated. Since this multiprofessional co-operation on such a practical level was in many ways a novel approach in the Finnish multi-tiered support system, the social validity among school psychologists should have been investigated. There is no specific reason to doubt it, but there is also a lack of evidence.

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References

Abikoff, H. 2009. "ADHD Psychosocial Treatments: Generalization Reconsidered." *Journal of Attention Disorders* 13 (3): 207–210. doi:10.1177/1087054709333385.

Ahtola, A., and P. Niemi. 2014. "Does It Work in Finland? School Psychological Services within a Successful System of Basic Education." *School Psychology International* 35 (2): 136–151.

Barkley, R. A. 1997. "Behavioral Inhibition, Sustained Attention, and Executive Functions: Constructing a Unifying Theory of ADHD." *Psychological Bulletin* 121 (1): 65–94.

Barkley, R. A., and C. Edelbrock. 1987. "Assessing Situational Variation in Children's Problem Behaviors: The Home and School Situations Questionnaires." In *Advances in Behavioral Assessment of Children and Families*, edited by R. J. Prinz, 157–176. Greenwich: JAI Press.

Bayat, M., G. Mindes, and S. Covitt. 2010. "What Does RTI (Response to Intervention) Look like in Preschool?" *Early Childhood Education Journal* 37 (6): 493–500.

Blair, C., and A. Diamond. 2008. "Biological Processes in Prevention and Intervention: The Promotion of Self-Regulation as a Means of Preventing School Failure." *Development and Psychopathology* 20 (3): 899–911.

Bradshaw, C. P., M. M. Mitchell, and P. J. Leaf. 2010. "Examining the Effects of Schoolwide Positive Behavioral Interventions and Supports on Student Outcomes: Results from a Randomized Controlled Effectiveness Trial in Elementary Schools." *Journal of Positive Behavior Interventions* 12 (3): 133–148.

Bunch-Crump, K., and Y. Lo. 2017. "An Investigation of Multitiered Behavioral Interventions on Disruptive Behavior and Academic Engagement of Elementary Students." *Journal of Positive Behavior Interventions* 19 (4): 216–227.

Bundock, K., L. S. Hawken, K. Kladis, and K. Breen. 2020. "Innovating the Check-In, Check-Out Intervention: A Process for Creating Adaptations." *Intervention in School and Clinic* 55 (3): 169–177.

Carr, E. 2005. "Recommendations for Reporting Multiple-Baseline Designs across Participants." *Behavioral Interventions* 20: 219–224.

Carr, E. G., G. Dunlap, R. H. Horner, R. L. Koegel, A. P. Turnbull, W. Sailor, J. L. Anderson, R. W. Albin, L. K. Koegel, and L. Fox. 2002. "Positive Behavior Support: Evolution of an Applied Science." *Journal of Positive Behavior Interventions* 4 (1): 4–16.

Cheney, D., L. Lynass, A. Flower, M. Waugh, W. Iwaszuk, C. Mielenz, and L. Hawken. 2010. "The Check, Connect, and Expect Program: A Targeted, Tier 2 Intervention in the Schoolwide Positive Behaviour Support Model." *Preventing School Failure* 54 (3): 152–158.

Chronis, A. M., H. A. Jones, and V. L. Raggi. 2006. "Evidence-Based Psychosocial Treatments for Children and Adolescents with Attention-Deficit/Hyperactivity Disorder." *Clinical Psychology Review* 26 (4): 486–502.

Cohen, L., A. Feinstein, A. Masuda, and K. E. Vowles. 2014. "Single-Case Research Design in Pediatric Psychology: Considerations regarding Data Analysis." *Journal of Pediatric Psychology* 39 (2): 124–137. doi:10.1093/jpepsy/jst065.

Coon, L. C., and J. T. Rapp. 2017. "Application of Multiple Baseline Designs in Behavior Analytic Research: Evidence for the Influence of New Guidelines." *Behavioral Interventions* 33 (2): 160–171.

Crick, N. R., and K. A. Dodge. 1994. "A Review and Reformulation of Social-information-processing Mechanisms in Children's Social Adjustment." *Psychological Bulletin* 115: 74–101.

Crone, D. A., L. S. Hawken, and R. H. Horner. 2010. *Responding to Problem Behaviour in Schools: The Behaviour Education Program*. New York: Guilford Press.

Drevon, D. D., M. D. Hixson, and R. D. Wyse. 2018. "A Meta-Analytic Review of the Evidence for Check-In Check-Out." *Psychology in the Schools* 56 (3): 393–412.

DuPaul, G. J., T. L. Eckert, and B. Vilardo. 2012. "The Effects of School-Based Interventions for Attention Deficit Hyperactivity Disorder: A Meta-Analysis 1996–2010." *School Psychology Review* 41 (4): 387–412.

Evans, S. W., J. Owens, and N. Bunford. 2014. "Evidence-based Psychosocial Treatments for Children and Adolescents with Attention-deficit/hyperactivity Disorder." *Journal of Clinical Child & Adolescent Psychology* 43 (4): 527–551. doi:10.1080/15374416.2013.850700.

Fuchs, L. S., D. Fuchs, and A. S. Malone. 2017. "The Taxonomy of Intervention Intensity." *TEACHING Exceptional Children* 50 (1): 35–43.

Gresham, F. M., G. Sugai, and R. H. Horner. 2001. "Interpreting Outcomes of Social Skills Training for Students with High-Incidence Disabilities." *Exceptional Children* 67 (3): 331–344.

Hawken, L. S., K. Bundock, K. Kladis, B. O´Keeffe, and C. A. Barrett. 2014. "Systematic Review of the Check-in, Check-out Intervention for Students at Risk for Emotional and Behavioural Disorders." *Education & Treatment of Children* 37 (4): 635–658.

Hawken, L. S., and R. H. Horner. 2003. "Evaluation of a Targeted Intervention within a Schoolwide System of Behaviour Support." *Journal of Behavioural Education* 12 (3): 225–240.

Horner, R. H., E. G. Carr, J. Halle, G. McGee, S. Odom, and M. Wolery. 2005. "The Use of Single-Subject Research to Identify Evidence-Based Practice in Special Education." *Exceptional Children* 71 (2): 165–179.

Horner, R. H., G. Sugai, and C. M. Anderson. 2010. "Examining the Evidence Base for School-Wide Positive Behavior Support." *Focus on Exceptional Children* 42 (8): 1–15.

Karhu, A., V. Närhi, and H. Savolainen. 2019. "Check in-Check Out Intervention for Supporting Pupils' Behaviour: Effectiveness and Feasibility in Finnish Schools." *European Journal of Special Needs Education* 34 (1): 136–146. http://www.tandfonline.com/doi/abs/10.1080/08856257.2018.1452144

Karhu, A., M. Paananen, and V. Närhi. 2017. *Check in Check Out (CICO): Toimintamalli Käyttäytymisen Yksilölliseen Tukemiseen. [Check in Check Out (CICO): Model for Individual Behaviour Support]*. 1st ed. Jyväskylä: Niilo Mäki Instituutti.

Kazdin, A. E. 2013. *Behaviour Modification in Applied Settings*. 7th ed. Belmont, CA: Wadsworth/Thomson Learning.

Kazdin, A. E., D. Bass, T. Siegel, and C. Thomas. 1989. "Cognitive-Behavioural Therapy and Relationship Therapy in the Treatment of Children Referred for Antisocial Behaviour." *Journal of Consulting and Clinical Psychology* 57 (4): 522–535.

Kendal, P. C. 2012. "Guiding Theory for Therapy with Children and Adolescents." In *Child and Adolescent Therapy*, edited by P. C. Kendall, 61–91. New York: Guilford Press.

Kincaid, D., G. Dunlap, L. Kern, K. L. Lane, L. M. Bambara, F. Brown, L. Fox, and T. P. Knoster. 2016. "Positive Behaviour Support: A Proposal for Updating and Refining the Definition." *Journal of Positive Behaviour Interventions* 18 (2): 69–73.

Klingbeil, D. A., E. H. Dart, and A. L. Schramm. 2019. "A Systematic Review of Function-Modified Check-In/Check-Out." *Journal of Positive Behaviour Interventions* 21 (2): 77–92.

Kratochwill, T., J. H. Hitchock, R. H. Horner, J. R. Levin, S. L. Odom, D. M. Rindskopf, and W. R. Shadish. 2013. "Single-Case Intervention Research Design Standards." *Remedial and Special Education* 34 (1): 26–38. doi:10.1177/0741932512452794.

Lane, K. L., J. R. Kalberg, A. L. Bruhn, S. A. Driscoll, J. H. Wehby, and S. N. Elliott. 2009. "Assessing Social Validity of School-Wide Positive Behavior Support Plans: Evidence for the Reliability and Structure of the Primary Intervention Rating Scale." *School Psychology Review* 38 (1): 135–144.

Lemerise, E. A., and W. F. Arsenio. 2000. "An Integrated Model of Emotion Processes and Cognition in Social Information Processing." *Child Development* 71 (1): 107–118.

Lochman, J. E., N. R. Powell, J. M. Whidby, and D. P. FitzGerald. 2012. "Aggression in Children." In *Child and Adolescent Therapy: Cognitive-Behavioral Procedures*, edited by P. C. Kendall (4 th edition), 27–60. New York: Guilford Press.

Maggin, D. M., J. Zurheide, K. C. Pickett, and S. J. Baillie. 2015. "A Systematic Evidence Review of the Check-In/Check-Out Program for Reducing Student Challenging Behaviours." *Journal of Positive Behaviour Interventions* 17 (4): 197–208.

Majeika, C. E., A. M. Van Camp, J. H. Wehby, L. Kern, C. E. Commisso, and K. Gaier. 2020. "An Evaluation of Adaptations Made to Check-In Check-Out." *Journal of Positive Behavior Interventions* 22 (1): 25–37.

March, R. E., and R. H. Horner. 2002. "Feasibility and Contributions of Functional Behavioral Assessment in Schools." *Journal of Emotional and Behavioral Disorders* 10 (3): 158–170.

McIntosh, K., A. L. Campbell, D. R. Carter, and C. R. Dickey. 2009. "Differential Effects of a Tier-Two Behaviour Intervention Based on Function of Problem Behaviour." *Journal of Positive Behaviour Interventions* 11 (2): 82–93.

Mitchell, B. S., R. Adamson, and J. W. Kenna. 2017. "Curbing Our Enthusiasm: An Analysis of the Check-In/Check-Out Literature Using the Council for Exceptional Children's Evidence-Based Practice Standards." *Behavior Modification* 41 (3): 343–367.

Paananen, M., T. Aro, V. Närhi, and M. Aro. 2018. "Group-Based Intervention on Attention and Executive Functions in the School Context." *Educational Psychology* 38 (7): 859–876. http://www.tandfonline.com/doi/abs/10.1080/01443410.2017.1407407

Schlosser, R., and J. Sigafoos. 2008. "Identifying "Evidence-based Practice" versus "Empirically Supported Treatment." *Evidence-based Communication Assessment and Intervention* 2 (2): 61–62. doi:10.1080/17489530802308924.

Smith, S. W., J. E. Lochman, and A. P. Daunic. 2005. "Managing Aggression Using Cognitive-behavioral Interventions: State of the Practice and Future Directions." *Behavioral Disorders* 30 (3): 227–240.

Sugai, G., and R. Horner. 2009. "Defining and Describing Schoolwide Positive Behavior Support." In *Handbook of Positive Behavior Support*, edited by W. Sailor, G. Dunlap, S. Sugai, and R. Horner, 307–327. New York: Springer US. doi:10.1007/978-0-387-09632-2.

Wolery, M. 2013. "A Commentary: Single-Case Design Technical Document of the What Works Clearinghouse." *Remedial and Special Education* 34 (1): 39–43. doi:10.1177/0741932512468038.