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Feasibility of a school-based intervention to promote active school transportation – The school personnel’s perspective

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ABSTRACT

Background: There is a growing need to invest in interventions that promote physical activity, such as active school transportation. Ideally, these interventions should be school-based to reach as many children as possible. However, school personnel have a heavy workload, and interventions must be feasible and sustainable. This study aims to explore the feasibility of a school-based intervention from the school personnel’s perspective and increase knowledge about what makes an intervention in a school context feasible.

Methods: A qualitative design was applied with individual interviews with 19 participants, including principals, teachers, project coordinators, one school nurse, and one operation manager. The data were analyzed with qualitative content analysis.

Results: The result were formulated into one main theme “Crossing the threshold – enter and you might feel at home” and three subthemes “Flexibility for integration in the school context”, “Sensing meaningfulness is essential for being worth the effort” and “A supportive design to enhance enthusiasm”. These themes indicate that schools have a heavy workload and that there is a threshold for schools to invest time and effort into health promoting intervention. Flexibility, meaningfulness, and support were thus crucial elements for making an intervention in the school context feasible.

Conclusion: The results of this study outline a promising strategy to meet the needs of school personnel and can serve as a valuable guide for further research concerning school-based interventions aiming to promote health.

1. Introduction

Increasing physical activity among children is crucial for their health (Clark et al., 2020). Active school transportation (AST), which is defined as walking or cycling to or from school (Mitra, 2013), is an effective strategy for increasing physical activity (Salvo et al., 2021). The use of AST can also positively influence cognition and academic achievements (Phansikar et al., 2019), and contributes to a decrease in air pollution and emissions of greenhouse gases (World Health Organization, 2022). Thus, investments in promoting AST align with achieving several Sustainable Development Goals (World Health Organization, 2022). However, the percentage of children using AST globally remains low, and interventions to increase AST are needed (Aubert et al., 2018). Examples of interventions to promote AST include Walking School Buses (Carlson et al., 2020; Scharoun Benson et al., 2020), education, encouragement, evaluation, enforcement, and engineering (Safe Routes to School) (Atteberry et al., 2016; Rodriguez et al., 2019), and cycle training

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programs (Ducheyne et al., 2014; Goodman et al., 2016). Walking School Buses have shown that recruitment of both participating children and route leaders can be challenging (Carlson et al., 2020; Scharoun Benson et al., 2020). Facilitating community engagement contributed to the success of Safe Routes to School intervention (Rodriguez et al., 2019), while challenges as communication issues and navigating regulatory processes for funding need to be addressed in future research (Atteberry et al., 2016). Cycle training programs have been successful in increasing cycling skills, but they have not shown on impact on AST (Ducheyne et al., 2014; Goodman et al., 2016). Moreover, reviews of interventions aiming to promote AST conclude that effectiveness of interventions varies (Chillón et al., 2011; Larouche et al., 2018; Villa-González et al., 2018), and research about sustainable interventions is required (Larouche et al., 2018).

In the context of interventions, sustainability refers to continuous and sufficient use of interventional components to achieve the desired goals and outcomes (Shelton et al., 2018). To ensure interventions become sustainable, it is desirable to address four phases within intervention research (Skivington et al., 2021). These phases are development, feasibility, evaluation, and implementation, each of which is significance for achieving sustainability (Skivington et al., 2021). The feasibility phase is particularly essential for determining if improvements to the active components are needed before progressing to full scale evaluation (O’Cathain et al., 2015; Skivington et al., 2021). This phase typically involves exploring the acceptability of the intervention and identifying factors that either facilitate or hinder implementation, as well as considering contextual elements (Bowen et al., 2009).

Global authorities encourage schools to become a place for health promotion, fostering healthy lifestyles among children (World Health Organization and the United Nations Educational Scientific and Cultural Organization, 2021). School-based AST initiatives are crucial in advancing equity, as they can engage a broad spectrum of children (Salvo et al., 2021), making schools a vital setting for such interventions (Scharoun Benson et al., 2020). Although Swedish schools are mandated to offer a minimum of 102 min of physical education weekly (Delisle Nyström et al., 2022), this falls short of the recommended 60 min of daily physical activity. AST initiatives can bridge this gap, offering children additional avenues to meet the daily physical activity guidelines (Larouche et al., 2020).

Unfortunately, lack of support, limited resources, and varied approaches generate challenges to comply with recommendations to promote health in schools (World Health Organization and the United Nations Educational Scientific and Cultural Organization, 2021). In addition, school-based interventions can induce extra workload on school personnel (Franco et al., 2023), thus, functional interventions that can be incorporated into the school context are vital (Finegood et al., 2010; McSweeney et al., 2017). However, to the best of our knowledge, limited studies have explored the feasibility of school-based interventions to promote AST from school personnel’s perspective. For instance, in a study by Vanwollegghem et al. (2014) on an intervention aimed at promoting AST by providing drop-off spots to decrease distances, teachers reported varied preferences for the timing of the intervention. In addition, some teachers noted limitations in organizing the initiative and perceived it as an additional workload (Vanwollegghem et al., 2014). To enhance the implementation and facilitate involvement and ownership among teachers, McSweeney et al. (2017) suggest that school-based interventions to promote healthy lifestyles should be integrated into the curriculum in advance. However, more studies exploring school personnel’s perspective of feasibility in AST interventions are needed.

In 2016, the research team launched an intervention at a northern Swedish elementary school to promote AST. The intervention is underpinned by the social cognitive theory, which acknowledges the influence of social factors on individual behavior (Lindqvist and Rutberg, 2018). To foster a sense of ownership and active involvement, the program employed an empowerment approach, involving teachers, parents, and children to collaboratively design the intervention. To further motivate children to use AST, the program incorporated elements of gamification, such as tracking and displaying AST usage on a classroom board, providing a visual representation of the class’s collective progress (Lindqvist and Rutberg, 2018). Further details of the initial development of the intervention can be found elsewhere (Lindqvist and Rutberg, 2018). A follow-up study published in 2020 indicated promising results for a feasible intervention design (Savolainen et al., 2020). The main findings showed that teachers were satisfied with the intervention and successfully integrated it into their teaching. However, because the study only involved one school class, two teachers and one principal, further investigation is needed to assess the intervention’s feasibility in other schools. Since then, public schools in two different municipalities have tested the intervention and agreed to participate in further exploring intervention feasibility. The objective of this study was to explore the school personnels perspective concerning the feasibility of the intervention and increase the knowledge about what makes an intervention in a school context feasible.

2. Methods

Following the objective of this study, a constructivist approach was applied to capture subjective experiences and meanings to understand the school personnels unique perspectives and the social processes linked with their school’s environment (Lincoln and Guba, 1985). Aligned with this, a qualitative design was used to explore feasibility and gain a deeper understanding of how the intervention works (O’Cathain et al., 2015). This approach also enables a deeper understanding of the conditions connected to the school context (Bengtsson, 2016). The methods used in this study follows the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al., 2007).

2.1. Description of the intervention

The intervention procedure comprised five steps. Step one involved convening a parental meeting to inform parents about the intervention activities and elucidate the benefits of AST. In step two, children participated in workshops aimed at educating them about the benefits of AST. In step three, the teachers created pedagogical assignments aligned with the school curriculum, such as integrating observations from their journeys to school into mathematic lessons, like counting people and animals encountered along

the way. In step four, the children were encouraged to use AST for a duration of four weeks. By using gamification, they participated in the weekly pedagogical assignments and continuously tracked of the number of active trips made and the distance covered. Furthermore, teachers had the option to register the AST trips in kilometers on a webpage, allowing them to visualize the collective distance traveled by the students on a map of Sweden. Finally, step five, involved celebrating their achievements. However, as the intervention is rooted in empowerment, allowing stakeholders to influence its content and procedures, the exact details may vary between schools.

2.2. Procedure and participants

The intervention was initiated in each school by the principals, who received information from the head of schools in the municipality. Subsequently, the principals informed the teachers about the intervention and encouraged them to implement it for four weeks during autumn with second graders and during winter with fifth graders. Project coordinators facilitated support and provided information through a webpage containing resources for teachers' planning and informational material for parents, such as letters and videos. Information about the study was sent out via email to those involved in the intervention. This information encompassed the study's objectives, methodologies, details regarding participant rights, and contact information for further inquiries. The information indicated that the interviews will be scheduled shortly after the completion of the intervention. A total of 37 people received the invitation and 19 participants from two different municipalities chose to involve in the study. The participants were teachers from second and fifth grade and other school personnel which included principals, project coordinators, one school nurse, and one operation manager, with working experience ranging from 1 to 34 years. The participants represented 13 different schools, rural and urban, comprising a diverse socioeconomic index. The socioeconomic index by The National Agency for Education comprises factors like guardian's education, student's immigration year, income, gender, financial aid, cohabitation status, siblings, and residential socioeconomic status (The National Agency for Education, 2023). The age of the participants ranged from 25 to 62 years, and most of them were women ($n = 16$). The study was conducted following the ethical principles within The World Medical Association's Declaration of Helsinki. The Regional Ethical Board approved the study and the participants provided written informed consent.

2.3. Data collection

Semi structured interviews were used to collect the school personnel's perspective of the intervention, which is suitable when exploring a specific topic (Holloway and Galvin, 2017). The first author conducted the interviews a few weeks after the participants ended the intervention. The data were collected between 2020 and 2022, at a location selected by the participants, which included their workplace, the researcher's office and online meetings. The interviewer had no prior relationship with the participants but has experiences in working in elementary schools. The level of engagement in the intervention varied among participants; teachers were directly involved in executing the intervention by delivering it to the children, while other school personnel contributed indirectly by providing support and relevant information to the teachers regarding the intervention.

Interview guides were utilized to collect data and ensure dependability (Graneheim and Lundman, 2004). These guides were tailored to accommodate the different roles of participants while addressing consistent themes, including the implementation processes, satisfaction with the intervention, attitudes towards its adoption, perceived alignment within the school environment, and perceived intervention outcomes. The formulation of these questions adhered to the recommended focus areas for feasibility studies (Bowen et al., 2009). For instance, teachers were asked to describe the intervention procedure, while other school personnel were asked to describe their experiences of being involved in the project. At the end of every interview, the interviewer summarized the gathered information to ensure it was understood correctly, which is one method of enhancing credibility (Lincoln and Guba, 1985). On average, the interviews extend over 45 min, were audio-recorded, and subsequently transcribed verbatim.

2.4. Data analysis

A qualitative latent content analysis was used to analyze the collected data. In line with Graneheim and Lundman (2004), the analysis started by reading the transcribed interviews several times and identifying meaning units. These meaning units were then labeled with codes that were compared to identify similarities and differences. Through this iterative process, preliminary categories emerged, combining the identified codes. The preliminary categories were compared and discussed within the research team, ensuring accuracy and appropriateness. These categories were then abstracted into themes by identifying the underlying meaning of them. This was an iterative process in which the themes were discussed several times until consensus was reached on the final themes, as presented in the results section. To enhance the study's credibility, all authors actively participated in the development of categories and themes (Graneheim and Lundman, 2004). In addition, the research team has different professional backgrounds, including experts as

Table 1
Overview of the results.

Main theme	Subthemes
Crossing the threshold – enter and you might feel at home	Flexibility for integration in the school context Sensing meaningfulness is essential for being worth the effort A supportive design to enhance enthusiasm

physiotherapists and a health coach, coupled with extensive knowledge in qualitative methodologies.

3. Results

We identified one main theme and three subthemes that describe the school personnel's perspective regarding the feasibility of the intervention and key elements that make a school-based intervention feasible (Table 1). The quotes used to illustrate the results are labeled with teacher (T), other school personnel (OSP), participant number (1–19) and school number (1–13). In the results we refer to participants when it represents aspects from both teachers and other school personnel. When it is specific to teachers, we refer to them as such.

3.1. Crossing the threshold – enter and you might feel at home

The main theme illustrates a transformative journey among the participants who experienced an initial threshold for investing time and energy into a health-promoting intervention in a school context. Yet, they embraced the intervention and despite the initial concerns about increased workload, their experience evolved into an unexpected ease and compatibility within the school context. This compatibility hinged on three pivotal premises: flexibility, meaningfulness, and support. These three key areas were described as vital for acceptability and feasibility of the intervention and are detailed in the below subthemes.

3.2. Flexibility for integration in the school context

The participants described the school context as a milieu with numerous obligations, including curriculum adherence. Consequently, the perceived flexibility to design the intervention in line with each teacher's schedules and teaching preferences was appreciated and considered necessary for its integration into the existing teaching. The flexibility was also described as promoting perceived manageability regarding the time required to implement the intervention, which could vary depending on holidays and other obligations. This led to variations in the time span for which the children were encouraged to use AST, ranging from three weeks to an entire semester. Most teachers did however state that the intended 4-week period was perceived as acceptable and manageable.

“So, projects like this always come up more or less in some way / ... / and I think that this solution is flexible in many ways, therefore it is easily implemented” - Participant 5 (T, School 3)

Several teachers further described that many students walked, cycled or rode the bus to school before the intervention. Therefore, to facilitate children's participation and increase physical activity during school hours the teachers adapted the intervention to measure movement, for example, by walking around the schoolyard at recess. The teachers appreciated the idea of educational assignments and described a wide range of flexibility regarding the number of assignments completed during the intervention. This range of flexibility resulted in having one assignment per week and in some cases none. Leaving out assignments was mainly due to external circumstances such as sick leave, organizational matters, and the challenge of having age-mixed groups. The teacher stated that being able to implement all parts of the intervention based on their prerequisites and circumstances was crucial since they also had to comply with their other obligations.

“It's about surviving and then there are some other ventures such as investment in mathematical competence, so it also competes with the rest” – Participant 9 (OSP, School 8)

3.3. Sensing meaningfulness is essential for being worth the effort

It was essential for the participants to perceive that the intervention was meaningful, including an anticipation that the intervention would generate something of value for them. In relation to this, they emphasized the importance of physical activity for children's health and their ability to learn and recognized the need to increase physical activity among children from a public health perspective. This was one reason for the participants to get involved with the intervention, as they believed it could increase children's physical activity. Another reason for involving in the intervention was the environmental and sustainability aspect.

“Health affects education and education affects health, and by informing that we know that today's young people get far too little physical activity and we have tried to motivate the teachers that if we get the students to be more active, maybe the teaching gets easier because they [the students] are more receptive” - Participant 18 (OSP, Schools 11, 12 and 13)

The teachers were positive towards the intervention, but a few participants had encountered other teachers that questioned its appropriateness, like children's AST is not one of the school's obligations. The participants believed that these doubtful teachers perhaps did not see the benefits of the intervention, which could affect other teachers' willingness to use it. A sense of meaningfulness among both the children and their parents was emphasized as important, and it was stated that if the children perceive participation as valuable and fun, then the teachers also have fun. According to the participants, the children enjoyed participating and wanted to continue the intervention, and the teachers described celebrating accomplishments as adding value for the children, although it was left out in some cases. It was further described by the participants that most of the parents thought it was a good initiative from a health and environmental perspective. However, they had also encountered parents who were anxious about letting their children go by themselves due to their age and potential risks on their route, but eventually realized it was not as problematic and were pleased to let

their children use active transport.

"I think that parents may have gotten the feeling that it actually makes it easier and at the same time that the children learn to take responsibility and that they [the children] actually enjoy being able to go to school by themselves, that they like it" - Participant 14 (T, School 11)

It was essential for the participants to feel that their work paid off. For some, the expectations were not fulfilled due to students who already used active school transport or depended on the bus to school. However, they all had noticed changes, such as an increased awareness among the children concerning their physical activity levels and increased AST. The teachers who wished for a greater change in AST highlighted that the intervention could target students with the possibility and the need to increase their active transport. Then, implementing the intervention would make a more significant difference and feel more meaningful.

"I know that this makes children more aware of how much they are physically active, and we have a lot of students who only sit after school hours, so it's good to get this health perspective although we have it all the time at school, I think it's especially important now that they see the meaning of it because most of the time they just "oh what is this, why should we do this" – Participant 16 (T, School 12)

The intervention led to several notable benefits, including a stronger collaboration in the school class, increased student alertness, and more hands-on learning opportunities. The participants had also observed more bicycles around the schools and a reduction in car presence, suggesting a shift towards more active transportation modes. Another perceived outcome was an increase of parents opting to walk or cycle. The majority of participants expressed a desire to maintain physical activity promotion and would encourage others to adopt the intervention. While some teachers saw no need for repetition, given the prevalent use of active transportation among students, they were open to re-run the intervention if the circumstances should change.

3.4. A supportive design to enhance enthusiasm

To support the start-up of the intervention, the participants believed that a joint kick-off was important, however, due to the pandemic, this was left out. In addition, in most cases, the parents were not gathered for parental meetings before starting the intervention. This was described as potentially affecting the enthusiasm among the teachers and parents. Cooperation was another helpful action for the teachers as they had someone to discuss their ideas with when planning the assignments. This in turn evoked a greater interest to be involved in the intervention. The teachers who did not cooperate wished they could have done so. The participants also suggested that people from outside the school context could represent different parts of the intervention and that a project coordinator with insight into the intervention could be helpful. The role of a project coordinator was described as valuable in the start-up phase but could also be appreciated throughout the intervention since it takes time to keep an intervention ongoing. Clear information about expectations throughout the whole chain, from the operational manager down to the teachers, was also depicted as beneficial to limit ambiguities regarding the performance of the intervention.

" / ... / it's always a starting stretch where they need a little push, a little help, both a boost of meeting colleagues who are participating and also have external people who come in and inspires, it gives a push from different directions" – Participant 2 (OPS, School 2)

The teachers were generally pleased with the support they received throughout the intervention, such as getting inspiration for the assignments through the website. The in-class information about health from a school nurse or a physical education teacher was valuable since it meant that the teachers did not have to provide this information themselves, and it was also inspirational for the children. The teachers further explained that the access to informational videos on the website with information directed toward parents and children was supportive and eased the planning of the intervention.

"I was helped by the fact that there was pre-made material, that there was a film for the parents / ... / it was almost like a tutorial" - Participant 1 (T, School 1)

In addition to using the webpage for tracking children's use of AST in kilometers, a few teachers chose to track it in a more analogic way with stamps on a board in the classroom for each trip the child made actively. According to the teachers, seeing how far they had come together through their active transport was one of the most exciting parts of the intervention for the children.

4. Discussion

In this study, we aimed to explore the school personnel's perspective concerning the feasibility of a school-based AST intervention. Exploring the feasibility of interventions early are crucial to succeed with implementation (Craig et al., 2008; Skivington et al., 2021). As schools have been recognized as arenas to promote healthy lifestyles but often lack the necessary resources (WHO & UNSECO, 2021), it is vital to increase the knowledge about what makes an intervention in a school context feasible. Our results show that schools experience significant workloads, and the prospect of additional responsibilities may act as a barrier to invest time and effort into health-promoting interventions, therefore creating a threshold for schools to participate. Recognizing and planning for this additional workload is crucial and it has been previously identified as a key factor in determining the feasibility of school-based interventions (Ryan et al., 2022). The current intervention was perceived as manageable and compatible with the available workload capacity. Therefore, the intervention outlined in this study could represent a promising approach for designing school-based interventions and merits further investigation into AST interventions for broader applications in schools. Our results show that flexibility, meaningfulness, and support are an important feasibility aspect to consider when developing and implementing AST interventions within the

school context. These insights underscore the importance of tailoring interventions to align with the specific needs and capacities of schools, thereby enhancing their likelihood of success.

The flexibility of the intervention was crucial, allowing the school personnel to tailor it to their specific situations and preferences. This is consistent with [Vanwolleghe et al. \(2014\)](#), who highlighted the benefits of a customizable AST intervention designed to meet the unique needs of a school, thereby ensuring its feasibility. Such flexibility facilitated the teacher's ability to modify the intervention to fit their context, echoing [Wood and Bandura \(1989\)](#) statement that efficacy beliefs can be enhanced by providing manageable tasks. Consequently, the flexible design likely reinforced the belief that integrating the intervention is achievable. The flexibility of this intervention aligns with empowerment-based approach within health promotion, wherein individuals are actively engaged in decision-making processes relevant to them ([World Health Organization, 1998](#)). Furthermore, an empowering approach that enables individuals to exert control over circumstances tailored to their needs is a critical contextual factor for practical implementation ([Durlak and DuPre, 2008](#)). Therefore, it is imperative that the intervention maintains flexible for teachers to adapt it to fit with their present situation.

Moreover, the intervention's flexibility enabled teachers to execute its components to varying degrees. Although this was perceived as a positive aspect, it also presents potential drawbacks, as the diversity in execution could influence expected outcomes and future implementation ([Ryan et al., 2022](#)). For instance, if participants had implemented the intervention consistently, the perceived outcomes might have varied from those currently reported. However, our study's findings indicate that the perceived outcomes, including increased awareness and shifts in physical activity levels, were consistent among the participants despite differences in execution.

Perceived meaningfulness, including anticipated results from their actions, was an important aspect in enhancing the acceptability of the intervention among school personnel. According to [Bandura \(2004\)](#), outcome expectation (i.e., the belief that a behavior will lead to something important) is one fundamental factor for motivation in. Consequently, the belief that the intervention would lead to a specific outcome could significantly bolster the willingness to implement it. The study's participants identified the potential to boost children's physical activity and their health as the primary motivation to involve in the intervention. This perspective is consistent with [Brustio et al. \(2018\)](#) who observed that teachers recognize the importance of physical activity for students' well-being and educational outcomes when implementing active lesson breaks.

An integral aspect of meaningfulness was the necessity for the intervention to be worth the effort, underscoring the importance of observable outcomes from actions taken. While the primary focus was on elevating the children's physical activity levels, another beneficial effect noted was increased alertness in the classroom among the children. This aligns with [Mahar's \(2011\)](#) findings, which suggest that teachers are more inclined to incorporate physical activities into their teaching when it enhances the learning environment and student behavior. Moreover, our findings align with the emphasis by [Vanwolleghe et al. \(2014\)](#) on the importance of encouraging teachers to integrate AST interventions into their existing duties. Specifically, our findings suggests that for teachers to be motivated to integrate these interventions, they must perceive them as valuable, especially given their already extensive responsibilities.

Our findings shed light on several aspects, both the participants desired support and support that they received during the intervention. The support provided through the webpage was particularly appreciated as it assisted in their planning of the intervention. Consequently, utilizing an informational webpage emerges as a viable strategy to bolster feasibility of interventions and simplify their execution. In the study by [Hivner et al. \(2019\)](#) it is suggested that web-based intervention can be equally effective as in-person interventions when training teachers to incorporate physical activity in their classrooms. Therefore, adopting web-based interventions could not only improve feasibility but may also facilitate a broader dissemination without comprising anticipated outcomes.

Support for boosting enthusiasm was considered most valuable at the outset but remained substantial during the intervention. Consistent with our prior research, such support, particularly cooperation, has been shown to sustain enthusiasm and involvement among school personnel ([Savolainen et al., 2020](#)). Similarly, [Hivner et al. \(2019\)](#) employed cooperation to facilitate the employment of classroom physical activities, emphasizing that collaborative planning for potential obstacles and their resolutions is vital to the implementation process. Such collaborative endeavors can strengthen individuals' beliefs in their capabilities, which resonates with the principles of social cognitive theory ([Wood and Bandura, 1989](#)).

In our intervention, social cognitive theory provided a framework for addressing children's behavior. However, considering the results, this theory may also be pertinent to the intervention's implementation process. In alignment with this perspective, [Hivner et al. \(2019\)](#) proposed that social cognitive theory could serve as a suitable framework for implementation of physical activity by elementary teachers in their classroom. Nevertheless, further research is needed to confirm the suitability of social cognitive theory as a framework for implementation of AST interventions from the teacher's perspective.

This study has several strengths, including the collaborative effort of all authors in data analysis and interpretation, with supporting quotations to enhance credibility and trustworthiness ([Graneheim and Lundman, 2004](#)). We used an interview guide to ensure the consistency and dependability of the data ([Graneheim and Lundman, 2004](#)). Including participants from various professional roles within the school context from two different municipalities enhances the credibility of our findings. A thorough description of the study's methods is provided for enhanced transferability. One potential limitation of this study could be the lack of perspectives from teachers who chose not to participate in the intervention. However, our findings provide insights into the challenges and factors affecting participation. The feasibility aspects explored in this study provide valuable knowledge for future larger-scale interventions.

5. Conclusion

There is a lack of research on the feasibility of AST interventions from the school personnel perspective. This study provides

substantial insights into this area, highlighting the need for:

1) flexible intervention designs that can be tailored to each school's unique conditions and the specific needs of individual teachers, 2) recognizing the importance of perceived value and relevance of the intervention to motivate school personnel to engage in AST interventions, 3) providing a support system can enhance integration of such initiatives in a school context. These findings offer a promising approach to address the requirements of school personnel to implement AST interventions, which may provide a valuable framework for future research on school-based interventions.

Conflicting interests

The authors declare no conflicts of interest.

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CRedit authorship contribution statement

Eva Savolainen: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. **Anna-Karin Lindqvist:** Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Validation, Writing – review & editing. **Stina Rutberg:** Conceptualization, Formal analysis, Funding acquisition, Methodology, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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