

ORIGINAL ARTICLE

# Implementing ‘The Zones of Regulation’ for Autistic Students: Teacher Perceptions and Practices<sup>†</sup>

Abigail M. A. Love<sup>1</sup>, Vicki Gibbs<sup>1,2</sup>, Danielle G. Roxburgh<sup>3</sup>, Elizabeth A. Dorn<sup>3</sup> and Ru Ying Cai<sup>1,4</sup>

<sup>1</sup>Aspect Research Centre for Autism Practice, Autism Spectrum Australia, Australia, <sup>2</sup>Faculty of Medicine and Health, University of Sydney, Australia, <sup>3</sup>Aspect Therapy, Autism Spectrum Australia, Australia, and <sup>4</sup>Olga Tennison Autism Research Centre, School of Psychology and Public Health, La Trobe University, Australia

**Corresponding author:** Ru Ying Cai; Email: [ryingcai@autismspectrum.org.au](mailto:ryingcai@autismspectrum.org.au)

(Received 16 June 2024; revised 20 August 2024; accepted 26 August 2024)

## Abstract

The Zones of Regulation (The Zones) is an 18-lesson curriculum that is aimed at helping students develop an awareness of emotions and skills for regulation. Although used by schools globally, no peer-reviewed evidence currently exists to support the use of The Zones. The purpose of this study was to examine the experiences of teachers implementing The Zones curriculum with autistic students. Feedback was gathered from 26 teachers throughout their implementation of The Zones. In this study, we employed a qualitative methodology to analyse the feedback from teachers. Descriptive statistics were used to report on acceptability, appropriateness, and feasibility. Our findings revealed that teachers described high levels of acceptability, appropriateness, and feasibility when reflecting on the delivery of The Zones. However, teachers reported that The Zones was not suitable for all students and classrooms. For students for whom The Zones was deemed appropriate, teachers modified the lessons and required peer support to deliver these modifications. With modifications, the teachers observed growth in areas such as students' comprehension of others' emotions and improved language around emotions. This study highlights the importance of further research to refine and tailor interventions like The Zones to better meet the diverse needs of autistic students in educational settings.

**Keywords:** autistic students; qualitative research; emotion regulation; The Zones of Regulation; autism spectrum disorder; education

Emotion regulation is a complex process of monitoring and modifying our emotional responses (Eisenberg & Spinrad, 2004). There has been much interest in understanding the emotion regulation processes of autistic<sup>1</sup> children, given that they have poorer emotion regulation abilities and use simpler and/or less effective emotion regulation strategies during times of distress than typically developing children (see review by Cibralic et al., 2019). These emotion regulation difficulties may be caused by breakdowns within different mechanisms of emotion regulation processes within the extended process model (Cai & Samson, 2024). As with non-autistic people, emotion regulation difficulties are related to a host of adverse outcomes across the lifespan for autistic individuals, including poorer social skills and engagement and lower academic performance (Berkovits et al., 2017; Konstantareas & Stewart, 2006). In addition, autistic individuals experience disproportionately

<sup>†</sup>This manuscript was accepted under the Editorship of Umesh Sharma.

high rates of mental health challenges, such as anxiety and depression (Bougeard *et al.*, 2021), which has been partially attributed to emotion regulation difficulties (Cai *et al.*, 2018, 2019).

### ***Interventions for Improving Emotion Regulation***

There is emerging evidence that emotion regulation abilities in autistic children can be improved through interventions, such as the Secret Agent Society (Beaumont & Sofronoff, 2008; Beaumont *et al.*, 2021) and the Resilience Builder Program (Aduen *et al.*, 2014). There has been limited evaluation of other intervention types, such as mindfulness-based interventions and those utilising technology (Conner & White, 2018; Fage *et al.*, 2019). Reyes *et al.* (2019) proposed that several components of cognitive behaviour therapy and mindfulness interventions may promote emotion regulation skill development in autistic individuals. One intervention incorporating elements of cognitive behaviour therapy that has been widely implemented across Australia and worldwide is The Zones of Regulation (The Zones; Kuypers, 2011). The Zones curriculum aims to assist children in developing an awareness of emotions and skills for regulation. The Zones program developers report that it suits children from 4 to adulthood. The curriculum can be implemented by anyone who supports someone experiencing difficulties regulating their emotions (e.g., educator, allied health professional, or parent). The curriculum consists of 18 lessons (taught over 17 weeks, a minimum of 30–60 minutes per week) and includes group instruction, games, videos, worksheets, handouts, and independent activities. In addition, The Zones materials provide extension activities and suggestions for how learning activities can be adapted for individual needs.

Despite the widespread use of The Zones, evidence for its efficacy is notably limited to students in the general population. Ochocki and colleagues (2020) evaluated The Zones for elementary-age students ( $N = 63$ ) to reduce disruptive behaviour and improve self-control. School social workers delivered 12 lessons to students, and results indicated no statistically significant decrease in students' disruptive behaviour or improvements in self-control. In another study, Conklin and Jairam (2021) explored the effects of The Zones on 56 elementary students' behavioural and emotional risk and found no differences between students receiving The Zones and a control group receiving standard instruction.

This scarcity of research also extends to applying The Zones with autistic students, despite its widespread use among this cohort. Nowell *et al.* (2019) explored a parent-assisted intervention for school-age children on the autism spectrum ( $N = 17$ ), incorporating elements of The Zones alongside Structured TEACCHing and Social Thinking. Results indicated that the intervention increased concept knowledge of social communication and self-regulation for both parents and children. However, no changes in behaviour were noted. Although elements of The Zones were used, it is not possible to draw conclusions about the elements of the intervention that were associated with these improvements (e.g., what can be attributed to The Zones), and the small sample size limits the generalisability of these findings. In another study, Öhlböck and colleagues (2024) examined the acceptability and feasibility of The Zones when implemented by primary school teachers in mainstream classes that included one to three autistic students. They found that training in The Zones enhanced teachers' self-efficacy for improving the emotional regulation of their autistic students, with the curriculum deemed acceptable, understandable, and feasible according to teacher perspectives. This study serves as an initial insight into teacher perceptions of The Zones when delivered in mainstream classrooms with a small proportion of autistic students. The perceptions of teachers using The Zones in specialist autism settings have yet to be explored.

### ***Use of The Zones at Autism Spectrum Australia (Aspect)***

Aspect runs a number of autism-specific independent schools in Australia. To enrol at Aspect, all students must have an autism diagnosis from a professional. Students can attend the schools from 4 to 18 years of age. They can attend main campuses (specialised school environments for autistic students),

distance education (a specific program designed for students to learn from home with the support of an Aspect teacher and digital learning tools), or satellite programs (where students are supported in an autism-specific class by Aspect teachers within a mainstream schooling environment). As part of their continuous improvement approach, Aspect seeks to examine student outcomes associated with using particular programs delivered in their schools. Given the widespread use of The Zones and the lack of an established evidence base, Aspect educators sought the support of this research team to investigate outcomes for students engaging in The Zones curriculum. During the design stage, however, it became apparent that there was considerable variability in how individual teachers implemented The Zones across Aspect schools (e.g., adapting lessons, omitting lessons). Therefore, to pave the way for a future study that could examine student outcomes, an initial study was deemed essential to gather teachers' perceptions of implementing The Zones with students on the autism spectrum.

### Current Study

Considering the current implementation of The Zones at Aspect schools and to extend the research by Öhlböck et al. (2024), this study aimed to test the feasibility and acceptability of The Zones in a specialist setting — specifically in autism-specific classrooms. We also explored teachers' perceptions of implementing the full Zones curriculum, as published in the manual (Kuypers, 2011). The following research questions guided this study:

1. How is The Zones feasible, appropriate, and acceptable for students on the autism spectrum?
2. What are the perceptions of teachers about The Zones when delivering to students on the autism spectrum in a specialist setting?

## Methods

### Procedures and Participants

Participants of this study were recruited from Aspect schools. After ethics was granted by the University of Sydney Human Research Ethics Committee (#2022/713), two education staff members (DR and ED) worked closely with two researchers (AL and RYC) for the project's lifecycle to recruit participants, support teachers, gather data, and interpret the results. To recruit teachers, the research team contacted principals, and expressions of interest were provided to teachers of students who would be available to run the entirety of the program throughout the research period. Expressions of interest were received from 14 teachers across five Aspect schools. Interested teachers were sent an online survey, which contained the participant information statement and consent question. Once teachers provided their consent, they were given access to The Zones manual (Kuypers, 2011) and any resources (e.g., adapted materials, worksheets, lesson plans) used at Aspect schools previously. The study participants were asked to implement the full Zones curriculum, as published in the manual (Kuypers, 2011), to their cohort of students on the autism spectrum. Two research team members conducted weekly phone calls with each teacher to monitor progress on the curriculum and gather incidental feedback. After the teachers implemented The Zones for two terms, participants were invited to take part in an optional focus group, and 12 teachers agreed (1 male, 11 females,  $M_{\text{age}} = 47.0$ ,  $SD_{\text{age}} = 31.11$ ,  $R_{\text{age}} = 25\text{--}69$ ). Most participants ( $n = 9$ ) were White, two were South-East Asian, and one identified as Mediterranean. Participants had diverse teaching backgrounds, with two participants having 1–2 years of experience, two having 3–5 years, and nine having over 5 years of experience. Their expertise in instructing autistic students using The Zones varied (time using The Zones): one had no prior exposure, four had less than 3 years of experience, and eight had more than 5 years of experience.

Teachers in our study taught classes of between four and 10 students across grades K–6. A total of 96 students ( $R_{\text{age}} = 5\text{--}12$ ; 23% girls) were in their classrooms. Ten of the 14 classrooms were satellite

classes, three were main campuses, and one was a distance education class. Eligibility for student placement in these classrooms required documentation confirming a professional autism diagnosis, as with all students in the school. According to background information provided by classroom teachers, five of the 96 students had limited verbal communication and used augmentative and alternative communication (AAC), and just over a quarter ( $n = 26$ , 27%) of the students had a co-occurring intellectual disability.

### **Community Involvement Statement**

This research study was co-produced with education staff members, including school principals, occupational therapists, psychologists, teachers, and consultants at an autism-specific school. They were invested in the research to improve and inform their educational practice. The schools and staff members were committed to a continuous improvement project, and one of their goals was to examine their use of The Zones and to support research into the efficacy of this commonly used curriculum tool. Specifically, the project design began with multiple meetings with research team members and education staff, during which the project goals and research design were established. In addition, the research team sought feedback from autistic researchers on the project's design and throughout key stages using an autistic advisory group engaged by Aspect for consultancy on research and service development.

### **Sources of Data**

#### *Survey*

Before teachers participated in an online focus group, they were asked to complete a 15-item Qualtrics survey about their perceptions of delivering The Zones. The items were adapted from the Acceptability of Intervention Measure, Intervention Appropriateness Measure, and Feasibility of Intervention Measure (Weiner *et al.*, 2017). Each measure includes four items (see Appendix A in the supplementary material). All items were measured with a 5-point Likert-type response format, ranging from 1 (*completely disagree*) to 5 (*completely agree*). Scales are created by averaging responses for each of the four items, with low scores indicating low acceptability, feasibility, or appropriateness and high scores indicating high acceptability, feasibility, or appropriateness. To further explore acceptability, one additional question was designed for this study, which asked, 'Would you recommend The Zones?' Teachers could respond 'yes' or 'no'.

#### *Focus groups*

After delivering The Zones to their classes for two school terms (20 weeks), teachers participated in a one-off focus group. To keep the number of participants small, two focus groups were conducted simultaneously on Zoom, and a researcher facilitated each. One focus group comprised four teachers and the other consisted of six teachers. Two participants who could not attend the focus groups opted to be interviewed individually. A semistructured interview guide was used for the focus groups and individual interviews (see Appendix B in the supplementary material), with questions such as, 'Was The Zones useful for improving children's social skills in your classroom?' and 'Did you need to use any modifications/accommodations for your autistic students in your classroom?' The focus group sessions ran for 60 minutes and were recorded and then transcribed for data analysis. Interviews were 30 to 40 minutes long, were facilitated by a member of the research team, and were recorded and transcribed.

### **Data Analysis**

The first research question was examined using survey data, with descriptive analyses that included means, standard deviations, and ranges. Survey data allowed for teachers to provide their individual

feedback without comparing it to others' experiences. Data were analysed descriptively due to the small sample size. The second research question was examined using focus group data, with qualitative data analysis. Focus groups were chosen because we wanted participants to be able to discuss some of the challenges together, have in-depth discussions, share insights and experiences, and offer diverse perspectives. For participants who were not able to attend a focus group due to timing, an interview was conducted.

The researchers used reflexive thematic analysis guided by Braun and Clarke's (2006, 2019) inductive approach methodology to analyse the qualitative data. Data were analysed using NVivo 12 software (QSR International, 2018), and the analysis was informed by the research team's experience and training, including training in psychology and education. First, AL familiarised herself with the data by note-taking and reading the transcripts. Then, she wrote codes that answered Research Question 2 and identified patterns in the data. The other research team members continuously revised codes, and AL defined and named a set of themes and subthemes. The themes were also reviewed with two members of the research team (Aspect), who are therapists with experience supporting autistic individuals and are familiar with The Zones program, to determine the final themes and subthemes. Discussions continued until consistency and discrepancies were resolved.

## Results

### **Feasibility, Appropriateness, and Acceptability of The Zones**

For teachers ( $N = 12$ ) in our study who completed the survey, results indicated high feasibility ( $M = 16.58$ ,  $SD = 2.11$ ), appropriateness ( $M = 16.00$ ,  $SD = 2.41$ ), and acceptability ( $M = 17.08$ ,  $SD = 3.0$ ), suggesting that, overall, teachers welcomed the option to implement The Zones, considered The Zones easy to use, and that it was a good match for their students. Further, 10 of 12 teachers (83.3%) indicated they would recommend the program to other teachers. Two teachers reported they would not recommend The Zones curriculum. Analysis of the qualitative data provides further understanding of these findings.

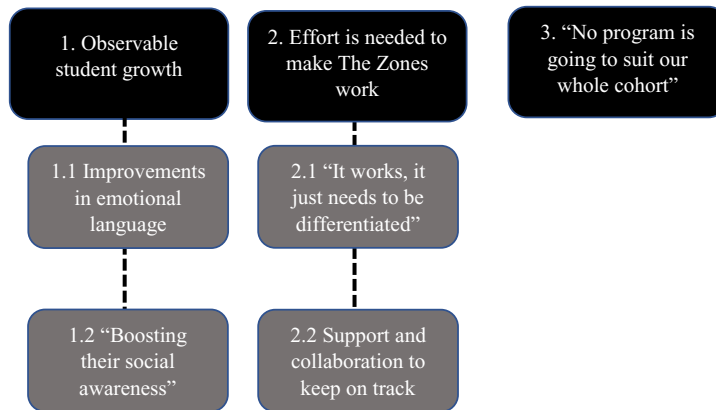
### **Teacher Perceptions of The Zones**

Qualitative analysis was conducted to understand the perceptions of teachers who participated in the delivery of The Zones. Following analysis, we identified three themes that related to teacher perspectives: Theme 1, *Observable student growth*; Theme 2, *Effort is needed to make The Zones work*; Theme 3, *No program is going to suit our whole cohort*' (see Figure 1). The quotes throughout the following section are reproduced verbatim, with teacher ID in parentheses.

#### **Theme 1: Observable student growth**

Teachers reported that they had observed student improvements over the two terms since commencing The Zones program (Theme 1: Observable student growth). Teachers detailed *improvements in emotional language* (Subtheme 1.1). One teacher described being 'quite surprised on [students'] knowledge about different emotions and especially to have words and tools to help them through' (T7). Many teachers shared stories of students generalising the language of The Zones in and outside of the classroom. One teacher described an instance where a student used The Zones language to identify their own state of self-regulation, and their classmates offered them tools and suggestions for how to regulate:

*We were on excursion today and they're like, 'I'm so in a zone red', just real casual. And then the boys were giving them ideas on how to move that feeling and it's been a really positive thing with my class. (T7)*



**Figure 1.** Teachers' Perceptions Delivering The Zones to Their Classrooms Across Two Terms: Themes and Subthemes.

Language improvement ranged from students identifying 'more complex feelings, like overjoyed, overwhelmed' (T9) to language that allowed the students 'to actually be an advocate for themselves' being able to recognise and support their own triggers and feelings (T9). Teachers talked about how The Zones language is now 'part of language that's used every day' (T7). This contributed to increased emotional literacy, which 'opened up a huge discussion for the class, so it was good' (T8), and led to practical conversations around emotions and regulation, including 'some really nice chats when [students have] had a horrible morning ... kids being able to talk about it' (T4).

However, an increase in emotional language was not observed among non-speaking students. Students who used AAC methods were observed to be 'very scripted ... they tell me what I want to hear rather than actually expressing how they feel' (T10). Teachers shared that one student who used Proloquo (an AAC app) would 'repeat phrases a lot' (T10) and, when prompted, would 'press the colour he's in, but again, I think that's just what he learned to script and do. I was not actually sure he understood' (T10). Teachers reflected that students who used AAC might need a different program or may need to learn The Zones at a different pace: 'For students who do not use verbal speech — it was very time consuming and students ended up just scripting responses — I do not feel the comprehension level is appropriate' (T9).

For the teachers in the study, the noted improvements related to social skills were predominantly around increased emotional awareness in social settings, or '*boosting their social awareness*' (T8; Subtheme 1.2). One teacher explained, 'The boys in my class, they have, I guess, more social awareness and just understanding of how their behaviours would affect others and their fluctuations and emotions too' (T8). The teachers described how students could now identify 'differences between one another and how we're all still very similar but everyone's different' (T8). Students became more aware of the 'consequences of your actions and how other people have feelings as well' (T7), including increased 'perspective taking' (T9). The improvements in socio-emotional awareness were also noted outside of the classroom. For example, one teacher reported more confidence on the playground: 'they've started being a bit more adventurous in the mainstream playground, playing with some other children and wanting to have a go, which has been really, really good' (T9). Teachers felt the impact on social awareness was important because 'children get quite impacted by others' (T3), and 'developing the concept of "this is another person, how might they cope with something?"' (T11) can be a challenging skill to learn, because it's hard, 'especially with children on the autism spectrum' (T11).

### *Theme 2: Effort is needed to make The Zones work*

Theme 2 related to the adaptations required when implementing The Zones program. The first subtheme, '*It works, it just needs to be differentiated*' (T4; Subtheme 2.1), summarised the required

adaptations teachers in this study made for their cohort of students. There was consensus that the curriculum needed to be adapted, except for one teacher who recognised she had a cohort of students who had high verbal and social skills, and therefore The Zones curriculum did not require modifications; however, she acknowledged that ‘if I had a different cohort, it would’ve been completely different, but my current cohort . . . it was feasible to do it’ (T8). Teachers frequently praised the curriculum as a good ‘baseline program template for a teacher. They can pick it up and have the aim for the lesson, the endpoint for the lesson’ (T6); however, they also spoke of the need to tailor the program for their particular students: ‘. . . but we teach kids with autism and we know that their special interests are important and how we deliver things are important’ (T6). One common adaptation was breaking up the lessons and making them more manageable, as teachers felt they ‘were very inconsistent lengths’ (T7), ‘some of them were long’ (T8), and students regularly ‘disengaged’ (T10) or ‘lost interest for the longer lessons’ (T3). One lesson was described as ‘quite a feat’ (T8), and all teachers reported breaking it ‘over four different lessons and focusing on one zone at a time — because there was no way knowing that was just one single lesson for us’ (T7).

Major accommodations were needed for the writing tasks, as ‘anything that involved them writing or doing any paperwork, it just went straight downhill’ (T3). Teachers explained that for the diverse needs of students in their classrooms, they ‘did have to adjust quite a few of the worksheets’ (T9) to ‘make it as visual and hands-on as possible’ (T3) as many of the worksheets were complex, visually overwhelming, and ‘required writing skills that were beyond our students’ (T8). However, this differentiation was successful and allowed all students to participate because ‘once we adjusted, or modified, used visuals rather than the words, they were able to complete written activities’ (T10). Additional accommodations included making changes to keep it ‘movement-oriented’ (T1) and modifications to language and length: ‘I found lessons were so long, so we actually had to split it over four different lessons’ to, for example, focus ‘on one zone at a time. Because there was no way, knowing that was just one single lesson for us, that was quite a feat, really’ (T8).

The second subtheme was about *support and collaboration to keep on track* (Subtheme 2.2). It reflected how teachers reported success when they were able to deliver the entire curriculum with a co-teacher, with the support of a researcher, or with knowledge of others going through the same process. This was important to the participants in our study because many felt they would ‘not have kept going’ if not for the accountability and ‘someone to bounce off that had already done The Zones’ (T8). Teachers regularly praised The Zones manual as ‘a strong outline’ (T10) and ‘effective and easy to read, but extremely time consuming’ (T8), and collaboration helped to reduce this time burden. One teacher said, ‘My two co-teachers, they’re brilliant as well, but having that support made me feel more positive about delivering something new’ (T7). Teachers felt that the accountability came from co-teachers and also from research staff because ‘it holds you accountable doing the research task’ (T4) and also made it ‘easier to think through how to modify and make things work for our diverse students’ (T8). Researchers checked in weekly with participants, with one teacher commenting that the weekly calls ‘did hold you a bit accountable that we did have to make sure we got our lessons in, it did make a difference’ (T1). For teachers in our study, being accountable for delivering a full Zones program required collaboration with peers and accountability partners, which for this study was often fulfilled through the research staff role. Otherwise, many teachers acknowledged that they probably ‘would have just picked bits and pieces to deliver, which is what we had always done’ (T9).

### *Theme 3: ‘No program is going to suit our whole cohort’*

Although teachers felt that most students benefited from The Zones program, there were also descriptions of negative student responses to The Zones (Theme 3). Teachers acknowledged that ‘no program is going to suit our whole cohort’ (T6) and described a number of adverse or challenging student responses when they reflected on teaching The Zones to their students across the two school terms. One teacher said some students ‘found it quite boring and quite disengaged’ (T10). Possibly, teachers felt that this was because ‘before this study, we just used parts of The Zones that were

acceptable to our students, but this study had us going through the whole curriculum, which meant we dealt with more disengagement than previously' (T9). Some students 'despised The Zones — like really hated it' (T14) and others became 'quite escalated' by The Zones (T9). Sometimes, students responded poorly to lessons that 'explored the sensory tools', as one teacher described that her students were 'actually agitated about using that' (T9). The worksheets and 'paperwork side' (T1) were other challenging triggers for students, as 'anything that involved them writing or doing any paperwork just went straight downhill' (T1). Also, the assumed rigidity with the colours linked to the emotions (a core component of The Zones program) acted as a trigger to some students, as many teachers explained that students felt anxious about identifying with certain zones, such as 'the red zone, that means it's a negative thing, so you must be doing something wrong' (T14). For these students, teachers suggested

*... coming up with alternatives for students that have consistently bad experience with the program. For example, I used the emotional weather forecast program for a student as recommended by his psychologist and it worked wonders. He is still able to learn about the concept of emotional regulation, but not with the language that triggered him. (T14)*

This reinforced Theme 3 that in a classroom of autistic students, not all students will find The Zones acceptable and useful.

## Discussion

In light of the importance of understanding the emotion regulation processes of autistic students (Cibralic *et al.*, 2019), there is a pressing need to gather more evidence for The Zones curriculum. The current study gathered the perceptions of teachers who implemented The Zones curriculum with students on the autism spectrum in specialist settings. We found high levels of acceptability, feasibility, and appropriateness reported by participating teachers. These findings are consistent with those of Öhlböck *et al.* (2024), where teachers of students on the autism spectrum in mainstream classrooms also rated The Zones as acceptable, understandable, and feasible. These results indicate that The Zones is perceived positively by teachers of students on the spectrum, which is likely a contributing factor to its widespread adoption in educational settings, even in the absence of evidence around concrete student outcomes (e.g., emotion regulation and social skills).

Our qualitative findings provided a richer understanding of teacher perceptions regarding the use and usefulness of the Zones. As reflected in Theme 1, teachers reported *observable student growth*, noting improvements in emotional language and socio-emotional awareness. According to teachers, students demonstrated enhanced emotional literacy and utilised The Zones vocabulary in various contexts, fostering meaningful discussions and promoting positive social interactions. However, teachers reported challenges, particularly among students who used AAC, highlighting the need for specific work in training teachers on how to adapt The Zones for students with complex communication needs. Iacono *et al.* (2022) recently published a scoping review of AAC research, which emphasised the benefits to students who use AAC in accessing their required curriculum standards and interacting with peers; however, the study acknowledges the urgent need for a more robust research base into the intentional methods associated with the use of AAC. It may be that programs such as The Zones can be modified for students with significant language difficulties following evidence-based research. However, it may also be that The Zones is not suitable for children with significant communication difficulties and a specific emotion regulation program may need to be developed and evaluated for this cohort.

Additionally, teachers emphasised the effort required to effectively implement The Zones curriculum, underscoring the importance of collaboration and support by other teachers in order for The Zones to be feasible. Collaboration emerged as a vital component in navigating the implementation process, with co-teachers and research staff contributing to support that teachers



identified as critical to the program's success. Teachers indicated a need for ongoing support and training to deliver The Zones effectively and efficiently. This finding echoed Öhlböck et al.'s (2024) research, as most of the teachers in their study (78.3%) indicated a need for additional training to supplement the formal training received at the start of their study. Teachers recognised the value of The Zones and acknowledged the program's effectiveness as a foundational template but emphasised the importance of the modifications needed to meet their students' needs. These ranged from modifying lesson structures to providing alternative modes of participation. To assist teachers at Aspect who were using The Zones in the classrooms outside of this research, we used our qualitative findings to create research-informed teacher guidelines that summarised modifications being used by teachers (Love & Cai, 2024).

In the final theme, Theme 3, teachers recognised that no single program could cater to the diverse needs of every student, and a class-wide approach may not be possible. Challenges were associated with program suitability and student engagement for some students in participants' classrooms, as reflected by resistance and disengagement among some students. Teachers recognised the limitations of a one-size-fits-all approach, advocating for personalised interventions and alternative strategies to accommodate diverse student preferences and sensitivities. This is consistent with what is known about educating students on the autism spectrum, as practices have to be individualised and adapted across students, contexts, and professionals and rarely work as a classroom model (Barry et al., 2020; Odom et al., 2021). However, as Kasari and Smith (2013) discussed, this is complex research. For The Zones, it is crucial to conduct studies that explore the outcomes. Equally important, however, is the investigation of the active ingredients and dosage, especially given the accommodations and modifications that will naturally occur in classrooms. In other words, research is needed to demonstrate the modifications that will still maintain positive outcomes for students so that teachers can have clear advice on how to modify The Zones and maintain the outcomes (Kasari & Smith, 2013).

Although teachers in our study and in Öhlböck et al.'s (2024) study reported the acceptability and feasibility of The Zones, we conclude that it may not be suitable for all autistic students, given the extent of adaptations needed, and that two teachers in our study did not recommend The Zones and deemed it unsuitable for their student cohort and classroom. We advise teachers supporting autistic students not to assume The Zones would be appropriate for their student cohorts. For the students for which the adapted version of The Zones may be suitable, there is an urgent need for researchers to conduct outcomes-based research that can assess the tangible and measurable social and emotional outcomes of autistic students completing the curriculum. Currently, we only have teacher perceptions of student outcomes.

### **Strengths and Limitations**

With widespread use of The Zones despite a limited evidence base, this study offers important insights into teachers' perceptions of The Zones curriculum when implemented with students on the autism spectrum. However, as a qualitative study with a small sample conducted within autism-specific schools in Australia, its ability to generalise to a broader population of educators is constrained. In this study, we relied on self-reported data, which may introduce bias or subjectivity in teachers' responses and their experiences were reflective of their unique cohorts and training. Future research should also consider the perspectives of autistic students, to understand their experiences with The Zones. In understanding the efficacy of programs for autistic individuals, autistic voices should be prioritised and the degree of neuro-affirming material should be assessed (Leadbitter et al., 2021). Finally, as with all qualitative research, the interpretation of the data was influenced by the researchers' perspectives, which could have impacted the analysis and conclusions drawn from the study. Qualitative data is a powerful tool for understanding the experiences and perceptions of a unique group of individuals, which is relevant for our study. Larger, more diverse samples and quantitative research can be done in the future to support researchers who seek to understand the more objective variables related to use of The Zones with autistic students.

## Conclusions

As observed in our cohort, teachers demonstrated great variability in how they implement The Zones, so future research designs must take into consideration the way in which teachers are delivering The Zones when evaluating outcomes. Research into this area is critical due to the significant uptake of The Zones across Australia and within classrooms internationally. By systematically evaluating the impact of The Zones on student outcomes within autism-specific settings and beyond, future research can provide valuable insights into its effectiveness in enhancing emotion regulation skills, social engagement, and overall wellbeing among autistic individuals. Moreover, elucidating the mechanisms through which The Zones exerts its effects and identifying factors that moderate its efficacy will inform the development of evidence-based practices for supporting emotional regulation in diverse populations. Ultimately, this collective research effort holds the potential to significantly contribute to the advancement of interventions aimed at promoting positive outcomes for autistic individuals and fostering inclusive educational environments conducive to their holistic development.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/jsi.2024.5>

**Acknowledgements.** The authors acknowledge the financial support of Autism Spectrum Australia (Aspect).

**Competing interests.** The authors have no relevant financial or non-financial competing interests to disclose.

## Note

**1** The authors are aware of different preferences and reasoning regarding the use of person-first (e.g., person with autism) versus identity-first (e.g., autistic person) language. The authors have chosen to write this paper using identity-first language, as this is the preference of most autistic people, including those on the research team (Bury *et al.*, 2023; Taboas *et al.*, 2023).

## References

- Aduen, P. A., Rich, B. A., Sanchez, L., O'Brien, K., & Alvord, M. K. (2014). Resilience builder program therapy addresses core social deficits and emotion dysregulation in youth with high-functioning autism spectrum disorder. *Journal of Psychological Abnormalities in Children*, 3(2), Article 118. <https://doi.org/10.4172/2329-9525.1000118>
- Barry, L., Holloway, J., & McMahon, J. (2020). A scoping review of the barriers and facilitators to the implementation of interventions in autism education. *Research in Autism Spectrum Disorders*, 78, Article 101617. <https://doi.org/10.1016/j.rasd.2020.101617>
- Beaumont, R., & Sofronoff, K. (2008). A multi-component social skills intervention for children with Asperger syndrome: The Junior Detective Training Program. *Journal of Child Psychology and Psychiatry*, 49(7), 743–753. <https://doi.org/10.1111/j.1469-7610.2008.01920.x>
- Beaumont, R., Walker, H., Weiss, J., & Sofronoff, K. (2021). Randomized controlled trial of a video gaming-based social skills program for children on the autism spectrum. *Journal of Autism and Developmental Disorders*, 51(10), 3637–3650. <https://doi.org/10.1007/s10803-020-04801-z>
- Berkovits, L., Eisenhower, A., & Blacher, J. (2017). Emotion regulation in young children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 47(1), 68–79. <https://doi.org/10.1007/s10803-016-2922-2>
- Bougeard, C., Picarel-Blanchot, F., Schmid, R., Campbell, R., & Buitelaar, J. (2021). Prevalence of autism spectrum disorder and co-morbidities in children and adolescents: A systematic literature review. *Frontiers in Psychiatry*, 12, Article 744709. <https://doi.org/10.3389/fpsy.2021.744709>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Bury, S. M., Jellet, R., Spoor, J. R., & Hedley, D. (2023). “It defines who I am” or “It’s something I have”: What language do [autistic] Australian adults [on the autism spectrum] prefer? *Journal of Autism and Developmental Disorders*, 53(2), 677–687. <https://doi.org/10.1007/s10803-020-04425-3>
- Cai, R. Y., Richdale, A. L., Dissanayake, C., Trollor, J., & Uljarević, M. (2019). Emotion regulation in autism: Reappraisal and suppression interactions. *Autism*, 23(3), 737–749. <https://doi.org/10.1177/1362361318774558>
- Cai, R. Y., Richdale, A. L., Uljarević, M., Dissanayake, C., & Samson, A. C. (2018). Emotion regulation in autism spectrum disorder: Where we are and where we need to go. *Autism Research*, 11(7), 962–978. <https://doi.org/10.1002/aur.1968>

- Cai, R. Y. & Samson, A. C. (2024). Emotion regulation in individuals on the autism spectrum. In J. J. Gross & B. Q. Ford (Eds.), *Handbook of emotion regulation* (3rd ed., pp. 360–366). The Guilford Press.
- Cibralic, S., Kohlhoff, J., Wallace, N., McMahon, C., & Eapen, V. (2019). A systematic review of emotion regulation in children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 68, Article 101422. <https://doi.org/10.1016/j.rasd.2019.101422>
- Conklin, M., & Jairam, D. (2021). The effects of co-teaching zones of regulation on elementary students' social, emotional, and academic risk behaviors. *Advanced Journal of Social Science*, 8(1), 171–192. <https://doi.org/10.21467/ajss.8.1.171-192>
- Conner, C. M., & White, S. W. (2018). Brief report: Feasibility and preliminary efficacy of individual mindfulness therapy for adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 48(1), 290–300. <https://doi.org/10.1007/s10803-017-3312-0>
- Eisenberg, N., & Spinrad, T. L. (2004). Emotion-related regulation: Sharpening the definition. *Child Development*, 75(2), 334–339. <https://doi.org/10.1111/j.1467-8624.2004.00674.x>
- Fage, C., Consel, C., Etchegoyhen, K., Amestoy, A., Bouvard, M., Mazon, C., & Sauzéon, H. (2019). An emotion regulation app for school inclusion of children with ASD: Design principles and evaluation. *Computers & Education*, 131, 1–21. <https://doi.org/10.1016/j.compedu.2018.12.003>
- Iacono, T., Goldbart, J., Douglas, S. N., & Garcia-Melgar, A. (2022). A scoping review and appraisal of AAC research in inclusive school settings. *Journal of Developmental and Physical Disabilities*, 34(6), 963–985. <https://doi.org/10.1007/s10882-022-09835-y>
- Kasari, C., & Smith, T. (2013). Interventions in schools for children with autism spectrum disorder: Methods and recommendations. *Autism*, 17(3), 254–267. <https://doi.org/10.1177/1362361312470496>
- Konstantareas, M. M., & Stewart, K. (2006). Affect regulation and temperament in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 36(2), 143–154. <https://doi.org/10.1007/s10803-005-0051-4>
- Kuypers, L. M. (2011). *The Zones of Regulation: A curriculum designed to foster self-regulation and emotional control*. Think Social Publishing.
- Leadbitter, K., Buckle, K. L., Ellis, C., & Dekker, M. (2021). Autistic self-advocacy and the neurodiversity movement: Implications for autism early intervention research and practice. *Frontiers in Psychology*, 12, Article 635690. <https://doi.org/10.3389/fpsyg.2021.635690>
- Love, A. M. A., & Cai, R. Y. (2024). *Research-informed guidelines for using The Zones of Regulation at Aspect*. Aspect Research Centre for Autism Practice. <https://www.aspect.org.au/uploads/documents/Research/Zones-of-Regulation-teacher-guidelines.pdf>
- Nowell, S. W., Watson, L. R., Boyd, B., & Klinger, L. G. (2019). Efficacy study of a social communication and self-regulation intervention for school-age children with autism spectrum disorder: A randomized controlled trial. *Language, Speech, and Hearing Services in Schools*, 50(3), 416–433. [https://doi.org/10.1044/2019\\_LSHSS-18-0093](https://doi.org/10.1044/2019_LSHSS-18-0093)
- Ochocki, S., Frey, A. J., Patterson, D. A., Herron, F., Beck, N., & Dupper, D. R. (2020). Evaluating the Zones of Regulation® intervention to improve the self-control of elementary students. *International Journal of School Social Work*, 5(2), Article 2.
- Odom, S. L., Hall, L. J., Morin, K. L., Kraemer, B. R., Hume, K. A., McIntyre, N. S., Nowell, S. W., Steinbrenner, J. R., Tomaszewski, B., Sam, A. M., & DaWalt, L. (2021). Educational interventions for children and youth with autism: A 40-year perspective. *Journal of Autism and Developmental Disorders*, 51(12), 4354–4369. <https://doi.org/10.1007/s10803-021-04990-1>
- Öhlböck, E., Stinson, M., McClintock, K., & Turtle, B. (2024). Evaluating the effectiveness of key components of Zones of Regulation™ curriculum training on teachers' self-efficacy at managing self-regulation needs in autistic pupils. *British Journal of Special Education*, 51(1), 111–122. <https://doi.org/10.1111/1467-8578.12501>
- QSR International. (2018). NVivo qualitative data analysis software (Version 12) [Computer software]. <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>
- Reyes, N. M., Pickard, K., & Reaven, J. (2019). Emotion regulation: A treatment target for autism spectrum disorder. *Bulletin of the Menninger Clinic*, 83(3), 205–234. <https://doi.org/10.1521/bumc.2019.83.3.205>
- Taboas, A., Doepke, K., & Zimmerman, C. (2023). Preferences for identity-first versus person-first language in a US sample of autism stakeholders. *Autism*, 27(2), 565–570. <https://doi.org/10.1177/13623613221130845>
- Weiner, B. J., Lewis, C. C., Stanick, C., Powell, B. J., Dorsey, C. N., Clary, A. S., Boynton, M. H., & Halko, H. (2017). Psychometric assessment of three newly developed implementation outcome measures. *Implementation Science*, 12, Article 108. <https://doi.org/10.1186/s13012-017-0635-3>

---

**Cite this article:** Love, A. M.A., Gibbs, V., Roxburgh, D. G., Dorn, E. A., & Cai, R. Y. (2024). Implementing ‘The Zones of Regulation’ for autistic students: Teacher perceptions and practices. *Australasian Journal of Special and Inclusive Education*, 1–11. <https://doi.org/10.1017/jsi.2024.5>