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ORIGINAL ARTICLE

A qualitative study of the emotion regulation experiences of children and adolescents with intellectual disabilities: "Because it helps my brain to calm down"

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ABSTRACT

Background: Children and adolescents with intellectual disabilities are prone to developing emotion dysregulation difficulties. The process model of emotion regulation may offer a comprehensive structure by which to understand this phenomenon.

Method: Seventeen children and adolescents with intellectual disabilities participated in semi-structured interviews on their experience of emotion regulation. Reflexive thematic analysis was used to analyse the data obtained.

Results: The applicability of the process model of emotion regulation for children and adolescents with intellectual disabilities was confirmed. Additional themes and sub-themes relevant to the model were also identified. Discrepancies in emotion regulation experiences were noted between autistic and non-autistic children and adolescents with intellectual disabilities.

Conclusions: The process model was found to be relevant to children and adolescents with intellectual disabilities. The identified themes and sub-themes could guide the development of outcome measures founded on the model for this population.

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Children and adolescents; emotion regulation; intellectual disability; individual perspectives; autism spectrum disorder

Emotion regulation difficulties are prevalent among children and adolescents with intellectual disabilities, and are often expressed as mental illnesses or behaviours of concern (BOC; Munir, 2016; Nicholls et al., 2022). BOC is defined as "behaviours that indicate a risk to the safety or wellbeing of the people who exhibit them or to others" (Chan et al., 2012, p. 37). BOC primarily encompasses: self-harm, physical aggression, non-compliance, overactivity, property damage, running away, screaming, temper "tantrums," repetitive questions, stealing, stripping, smearing faeces, and sexualised behaviours (Emerson et al., 2001; Emerson & Einfeld, 2011). Mental illnesses and BOC have long term impacts on this population, such as reduced quality of life, belonging, emotional wellbeing, and employment acquisition (Munir, 2016; Svetlana et al., 2018).

Between 18 and 35% of children and adolescents with intellectual disabilities are diagnosed with autism spectrum disorder (Dunn et al., 2018; Maenner et al., 2020). Comparatively, individuals with a dual diagnosis of autism and intellectual disability, experience worsened quality of life, particularly in the areas of social inclusion, interpersonal relationships, and physical wellbeing (Arias et al., 2018); similar trends are also seen between autistic individuals without intellectual disabilities and typically developing peers (Skaletski et al., 2021). Autistic individuals with intellectual disabilities (A-ID) are 2.5 times more prone to developing emotion dysregulation, compared to their peers only diagnosed with an intellectual disability (O-ID; Bakken et al., 2010). This susceptibility may stem from traits associated with autism, such as, sensory sensitivity and rigid thoughts and behaviours, particularly when coupled with the use of maladaptive emotion suppression and avoidance strategies (American Psychiatric Association, 2022; Hollocks et al., 2022; Mazefsky et al., 2013; Samson et al., 2012). Given these complexities, it is important to consider co-occurring conditions, and use a widely accepted theoretical framework of emotion regulation, to comprehensively understand the emotion regulation experiences of individuals with O-ID.

The process model of emotion regulation, is arguably the leading framework in the emotion regulation field

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(Cremades et al., 2022; Gross, 2014). It is well-suited to understanding the emotion regulation experiences of children and adolescents with intellectual disabilities, as the model focuses on expressions of emotion regulation and dysregulation, rather than on diagnoses (Gross, 2014). Consequently, the process model aligns with the suggested transdiagnostic approach for this population, which is advocated due to the high prevalence of co-occurring diagnoses (Astle et al., 2022; England-Mason, 2020). The process model consists of five domains of emotion regulation: situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross, 2014); see definitions in Box 1. These domains overlap and are cyclic in nature, as emotion regulation strategies can lead to the formation of new situations, which can trigger the need for further emotion regulation (Gross, 2014).

Although the process model is a prominent emotion regulation framework, efforts to apply the model to children and adolescents with intellectual disabilities have been limited to the perspectives of parents and teachers in two separate qualitative studies to date (Girgis et al., 2024; Girgis, Paparo, Roberts, et al., 2024). In these studies, teacher perspectives on the emotion regulation experiences of this population were gathered using focus groups, likewise parental insights were collected using semi-structured interviews. Both supported the suitability of the process model for this population, and identified several adaptive and maladaptive strategies. This research also suggested differences between the perspectives of parents with A-ID children and parents with children with O-ID (Girgis et al., 2024). Comparatively, parents of A-ID children reported cognitive distortions more often, while parents with children with O-ID reported cognitive restructuring more frequently.

The perspective of children and adolescents on emotion regulation, within the process model framework, is currently absent. This is unsurprising given there are inherent challenges to including individuals with intellectual disabilities in research, particularly, a lack of validated measures, appropriate theoretical models, and difficulties gathering informed consent (Maes et al., 2021). Despite these challenges, it remains important to include the "voice" of this population (Maes et al., 2021), as exclusion prevents the comprehensive capture of lived experience. Moreover, exclusion impacts outcome measure development and is related to lower content validity (Brooks & Davies, 2008; Patel et al., 2023).

The aim of the current study is to directly gather the perspectives of children and adolescents with intellectual disabilities regarding their emotion regulation experiences, and investigate the relevance of the process model to this population. Consistent with prior studies, a qualitative approach will be utilised, as process model-based outcome measures have yet to be validated for this population (Girgis et al., 2021). Comparisons will also be made between A-ID and O-ID individuals, given there may be emotion regulation differences between these two groups (Girgis et al., 2024).

Method

Participants

Children and adolescents with intellectual disabilities ($N = 17$, *Female* = 6) participated in the study. Verification of an intellectual disability diagnosis was

Box 1. Definitions and examples of the five domains of the process model of emotion regulation as based on Gross (2014).

Domain	Definition	Example
Situation Selection	An individual first becomes aware of an upcoming situation and the associated emotional reaction. This leads them to either initiate or avoid the situation.	A child avoiding bath time by hiding or a child requesting their birthday presents early.
Situation Modification	When a situation has commenced the individual can modify the environment to alter the emotional impact.	Using headphones to help with homework or chores completion.
Attentional Deployment	The ability to shift attentional focus. Redirecting attention can be grouped into three categories. Distraction: the ability to either redirect attention to non-emotional aspects of a situation or away from the situation entirely. Concentration: attention is sustained by the engagement of tasks which occupy finite cognitive abilities. Rumination: directs attention to emotions and related consequences	Distraction: child averting their eye gaze and focusing on a toy rather than their parents arguing. Concentration: when a child is concentrating on a YouTube video. Rumination: when an adolescent worries about hypothetical threats.
Cognitive Change	The individual evaluates whether an event can be managed within the context of their goals.	Reframing is one strategy, wherein an adolescent engages in self talk about being excited instead of anxious when presenting a class speech.
Response Modulation	This domain occurs later in the emotion regulation process and focuses on changing the trajectory of behavioural, experiential, or physiological responses.	When an adolescent is behaving aggressively and then walks around their school to reduce this state.

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established through one of two methods. Participants were either required to be enrolled in a purpose-built school catering to students with an intellectual disability, which necessitates a diagnosis of intellectual disability, or accepted into the Australian National Disability Insurance Scheme (NDIS) with a diagnosis of intellectual disability. The severity of the intellectual disability ranged from mild to severe, as determined by assessment, parent, and school reports. Participant ages ranged from 8–22 ($M = 16.41$), and all participants were screened for autism using the developmental behaviour checklist-autism screening algorithm (DBC-ASA; Brereton et al., 2002).

Procedure

This study was approved by the University of Technology Sydney Human Research Ethics Committee (approval number: ETH16-0925). Convenience sampling was used to recruit participants, specifically, purpose-built schools for students with intellectual disabilities and National Disability Insurance Scheme (NDIS) funded support coordinators of children and adolescents with intellectual disabilities were contacted by email. Informed consent was gathered, specifically, parents were able to consent on behalf of the participant if they were younger than 18 years old. Participants over the age of 18 provided consent, in addition to parental consent. Informed consent consisted of easy read English consent forms with visual aids as needed, explanation of the consent forms using accessible language/communication, and parental support.

Participants were allocated an hour to complete the interview in their home. Parents were present during the interview and instructed not to offer responses, but encouraged to interpret idiosyncratic language expression or vocalisations if requested by the interviewer. The interviews were conducted by the first author (MG), a female clinical psychologist and PhD candidate. The interviews were audio recorded, and later transcribed. During the interviews field notes were taken. To mitigate the known challenges inherent to the inclusion of this population, individual modifications to interviews were made for each participant: these included the use of drawings, simplified language, parents offering alternative phrasings, and relating questions to a participant's interests.

A semi-structured interview format was used. First closed ended questions were used to determine the relevance of the question. If the participant indicated the question was relevant, the participant was then encouraged to provide examples to mitigate against agreeableness, see interview guide in supplementary file 1. The questions were centred on the general emotion regulation experiences of the participants, as well as their emotion regulation experiences within the context of the process model domains (i.e., situation selection, situation modification, attentional deployment, cognitive change, and response modulation; Gross, 2014). Participants received compensation for their involvement, which included a $20 (AUD) gift voucher and a brief reading and language comprehension assessment and report. The results from this assessment were not considered within the context of this current study. This procedure was assessed against the COnsolidated criteria for REporting Qualitative research Checklist (COREQ; Tong et al., 2007), see Appendix.

Measures

Demographic information

The following participant demographics were collected: age, gender, diagnosis, intellectual disability severity, co-occurring diagnoses, and communication type.

Developmental Behaviour Checklist-Autism Screening Algorithm (DBC-ASA; Brereton et al., 2002)

The DBC-ASA is an informant-based autism spectrum disorder screener for children and adolescents with intellectual disabilities. The DBC-ASA was completed by the participant's parents. The DBC-ASA contains 29 items, and has good internal consistency ($\alpha = .94$), sensitivity (0.86), and specificity (0.69). The recommended threshold score is ≥ 17. The DBC-ASA was used to differentiate between the A-ID and O-ID groups. Participants above the threshold were considered part of the A-ID group ($N = 11$), and those below the threshold were considered part of the O-ID group ($N = 6$).

Analysis

The analysis utilised Braun and Clarke's (2006) reflexive deductive guide, and considered the data through the process model domains (i.e., situation selection, situation modification, attentional deployment, cognitive change, and response modulation; Gross, 2014). Braun and Clarke (2019) recommend one coder, as such the thematic analysis was only completed by the lead author (MG). Braun and Clarke (2019) advise against reliability checks, emphasising that the analysis aims to thoughtfully consider the data and to synthesise themes directed by theoretical frameworks, rather than pursuing consensus. In line with this recommendation, a single coder has previously been used to evaluate the emotion

regulation of children and adolescents with intellectual disabilities (Girgis, Paparo, Roberts, et al., 2024).

Transcripts were organised using the qualitative software NVivo 12 (QSR International Pty Ltd, 2019). Following Braun and Clarke's (2006) six steps, the transcripts were analysed thematically and were informed by field notes. Initially, first impressions were formed after reviewing the transcripts repeatedly. The data was categorised into codes and linked to the five process model domains (Gross, 2014). Additionally, recurrent codes distinct from the process model domains were documented. The codes were synthesised into themes and sub-themes, and cross checked across the transcripts. The themes and sub-themes were then refined, defined, and named; quotes were also selected to represent these themes.

Results

The 17 participants were between 8 and 22 years old. Eleven were above threshold on the DBC-ASA, see Table 1. As detailed below, overall the results supported the applicability of the process model domains to this population (i.e., situation selection, situation modification, attentional deployment, cognitive change, and response modulation; Gross, 2014). In addition to these findings, further themes and sub-themes were also identified, see Table 2 and supplementary file 2. Throughout the results, demographic information is paired with quotes to provide context, this information is presented in the following order: age, gender, severity of intellectual disability, and if the DBC-ASA results were above or below threshold (e.g., 17, female, moderate, above/below DBC-ASA threshold).

Table 1. Demographic data,

Demographics	
Children and Adolescents	N = 17
Age	16.41(3.78)
Age range	8–22
Gender (F:M)	6:11
School Grade	M = 8.4, SD = 2.88, range = 3-12
Schooling type	Purpose built school (5)
	Home schooling (2)
	Mainstream school with support class (2)
	Finished school (8)
Ethnicity*	Aboriginal and/or Torres Strait Islander (3)
	Asian (3)
	Caucasian (9)
	European (2)
	Indian (1)
	Middle Eastern (1)
Demographics	
Diagnosis	Intellectual disability (13)
	Global developmental delay (2)
	Down syndrome (2)
Severity of intellectual disability	Mild (6)
	Moderate (10)
	Severe (1)
Co-occurring diagnosis*	Autism/Above DBC-ASA threshold (11)
	Anxiety (3)
	Oppositional defiant disorder (3)
	Attention-deficit/hyperactivity disorder (8)
	Obsessive compulsive disorder (1)
	Cerebral palsy (2)
	Depression (1)
	Post traumatic stress disorder (1)
	Sensory processing disorder (1)
Communication type	Speech-based communication (16)
	Non-speech using (1)

Note. *data overlapped.

Situation selection

All participant interviews supported the relevance of the situation selection domain for this population, as emotion regulation experiences were consistent with choices to either select or avoid specific situations. Furthermore, participants reported at times being incapable of selecting situations or made distressing selections. Additional sub-themes were also identified: Managing stimulation and selection acceleration and deceleration.

Managing stimulation

All participants described seeking out preferred environments and stimuli, such as: iPad, TV, YouTube, games, video games, toys, favourite foods, sensory toys and lights, special interests, sports, shopping, alone time or quiet time, social connections with family and friends, and music, " … if it's … a sad video, like on YouTube, I … turn it to a different thing. Like watching … a happy video or I listen to some music, or drawing" (19, female, moderate, above DBC-ASA threshold). Participants also described avoiding or withdrawing from known unpleasurable environments or stimuli, such as: Animals, insects, social media, chores, showering,

Table 2. Themes and sub-themes.

Themes	Sub-themes
Situation selection	Managing Stimulation
	Selection Acceleration and Deceleration
Situation Modification	Incorporating or Removing Sensory Elements
	Security within Connection
Attentional Deployment	Distraction
	Concentration
	Rumination
	Worry
Cognitive Change	
Response Modulation	Suppression
External Emotion Regulation	
Limited Emotional Granularity	
Limited Somatic Insight	
Limited Metacognition	
Symbolic Play	

certain individuals, school subjects (i.e., Math), crowds, and sensory textures. Participants also indicated they enforced their choices by recruiting family assistance, communicating their intent, and arguing in favour of their preference, "[I avoid] cleaning my room … Argue point till I don't do it" (13, male, mild, above DBC-ASA threshold). Transitions between situations could also be difficult, " … it takes me a bit to get away from what I'm doing. Because once I'm in that like area of doing stuff, I would like to finish some of it" (22, male, mild, above DBC-ASA threshold). Within the context of managing stimulation, participants also described physically moving locations. This was expressed as staying away from sharp objects (when self-injurious thoughts were present), taking a step back from a frightening object/animal, leaving classrooms, seeking out contact with parents, moving into another room to avoid a stimulus, or seeking out quiet or alone time, "go to the most quiet [place]" (22, male, mild, above DBC-ASA threshold).

Selection acceleration and deceleration

Some participants indicated they either sped up or slowed down the arrival of a situation. The initiation of a new situation was accelerated by encouraging others to move faster " … might push my dad to do stuff … I probably … say [hurry up] a thousand times" (17, male, moderate, below DBC-ASA threshold). Participants also said they would wait outside for family, completed chores quickly "I run when I do it" (13, male, mild, above DBC-ASA threshold), organised items to hasten leaving the house, and finished shopping quickly to avoid crowds. Conversely, the arrival of situations was noted to be decelerated by walking slowly, asking for a minute before starting chores, dressing slowly for school, and starting and competing tasks slowly, "I don't like getting in [the shower], so I take my time" (18, male, moderate, above DBC-ASA threshold). This deceleration strategy also appeared to be utilised for situations with positive associations, " … if it's something that you're excited about, then you need to feel it" (13, male, mild, above DBC-ASA threshold).

Situation modification

The data aligned with the situation modification domain, as all participants reported making modifications to their environment to accommodate emotion regulation. Two sub-themes were also identified: Incorporating or removing sensory elements and security within connection.

Incorporating or removing sensory elements

Most participants described modifying situations by adding elements to assist with self-soothing. With regard to sleep, participants co-slept, slept with toys, and slept with the light on. While accessing the community, participants wore clothing with soothing textures, engaged in routine such as sitting in the same exact spot, and took toys with them in the car "[toy makes me feel] bit safe and protect[s] me" (18, male, mild, below DBC-ASA threshold). While general modification strategies included: using mobile phone, music, headphones, fidget toys, using favourite items, eating, drawing, asking for help, asking for a big squeeze, talking to toys, and covering their eyes, mouth and ears. Likewise, they would also cover their parent's mouth. Participants would also remove themselves from rooms when strangers visited, or would move away from arguments. This would also extend to hiding body parts when feeling insecure, such as covering perceived crooked teeth when speaking.

Security within connection

Participants reported they were better able to cope with distressing situations when supported by their family or friends. This support was sought out and presented as cuddles, requesting company, asking for help, co-sleeping, and requesting parents accompany them. This security within social connection was also expressed as physical proximity to their parents, including holding hands, or family sitting either side of them in public to prevent distress, "at least I have my mum" (17, female, moderate, above DBC-ASA threshold). During social interactions participants reported letting others lead conversations in socially confusing situations, asked for hugs when feeling alone, and whispered to maintain privacy "I would whisper to my mum … when I get my period" (17, female, moderate, above DBC-ASA threshold).

Attentional deployment

The relevance of the attentional deployment domain was confirmed, with all but two participants endorsing emotion regulation strategies consistent with this domain. Participants reported the use of distraction, concentration, and rumination; and an additional subtheme of worry was identified.

Distraction

Participants described the use of distraction to manage their emotions, "distract myself from stuff to make my feelings feel small" (17, male, moderate, below DBC-ASA threshold). Particularly they used: Drawing, eating,

sensory items, mobile phone, video games, music, storytelling, iPad, crafting, TV, trampoline, going outside, talking to friends, drinking water, YouTube, singing, reading, writing, patting pets, and engaged in special interests. They also reported distraction was also achieved by shifting their eye gaze away from distressing stimuli. Participants were also able to distract others when others were dysregulated.

Concentration

Participants reported distractions could evolve into concentration, particularly when engaging in special interests, video games, crafting, YouTube, meditation, and watching TV, "listen and watch … TV. Relax" (18, male, mild, below DBC-ASA threshold). Participants reported they found it difficult to disengage when concentrating, and this was expressed as fixed eye gaze. Concentration was also engaged when arguments occurred, during which they found it difficult to avert their eye gaze, "Even if I do look away, I can't keep myself from looking away" (17, female, moderate, above DBC-ASA threshold).

Rumination

Participants disclosed the use of rumination, the process of focusing on past events, " … it's … stuck in my mind. I … try … to think about [a] new image, but that image was … still stuck" (13, male, mild, above DBC-ASA threshold). The content of the ruminations included: family deaths, bullying, past mistakes at school, and whether they made mistakes recently. Rumination was also expressed as repetitive conversations or statements.

Worry

Participants voiced their worries, the process of focusing on the future, "I think about life and … how [it] could go wrong and how [it] could go … good" (13, male, mild, above DBC-ASA threshold). Participants were particularly worried about: getting a job, wasting time, potentially not liking a choice they make, others judging them, going to camp, a new school teacher, going to school, the health of loved ones, new locations, or going to known distressing situations. Worry was also expressed as repetitive questions.

Cognitive change

All but two participants reported the use of cognitive change to manage their emotions, which is suggestive of the applicability of the cognitive change domain to this population, "I was just trying [to] think about something else" (13, male, mild, above DBC-ASA threshold). Of particular note, various types of cognitive distortions were reported by the participants, which included: dichotomous/black and white thinking, catastrophising/fortune telling, personalisation and blame, and labelling: "I may be stupid at times … " (19, female, moderate, above DBC-ASA threshold). Conversely, several forms of cognitive restructuring were reported, such as: generate alternative/ reframing, perspective taking, problem solving, asking questions/seeking clarification, positivity reorientation, and positive affirmations or mantras. Specifically, a variety of mantras, were used such as: I can do this, calm yourself, doesn't matter, you're okay, I'm a good person/student, my parents love me, practice makes perfect, and "Be not upset" (18, male, mild, below DBC-ASA threshold). Participants also gave themselves positive affirmations from the perspective of their favourite cartoon or video game character. Participants further expressed being able to assist others to use cognitive change, specifically they provided mantras and assisted in problem solving, "With my mum I'll probably solve it. Like I was trying to like help her in some way" (13, male, mild, above DBC-ASA threshold).

Response modulation

The response modulation domain was associated with the largest volume of data. All participants disclosed the use of a variety of strategies, and emotion regulation experiences. Specifically, emotion dysregulation was expressed as self-harm, aggressive behaviours, noncompliance, escape based behaviours, and unpleasant physiological responses. Participants tended to regulate their emotions by meeting their sensory needs (i.e., having quiet/alone time, drinking water, sensory activities, using a punching bag, and going for walks etc). Participants also described using meditation by way of taking deep breaths, counting to 10, and practicing yoga, "Because it helps my brain to calm down" (14, female, moderate, above DBC-ASA threshold). Additionally, participants used communication to regulate their emotions, whether via speech with friends, family or favourite characters; or through other mediums such as journalling, "When I talk about my feelings, I guess it helps sometimes" (17, female, moderate, above DBC-ASA threshold). Medication was also reportedly used to regulate emotions, though participants had varying experiences; wherein, some disliked medication, others found the medication helpful but did not request it, while the third group requested the medication. Of particular note was the use of maladaptive emotion regulation strategies, as represented in the sub-theme of suppression.

Suppression

Participants voiced deliberate attempts to conceal their expressions. This was accomplished by refraining from communication, withdrawing, attempting to prevent facial expressions and hands from shaking, and attempting to supplant their emotions, "Make up my feelings" (14, female, moderate, above DBC-ASA threshold). If their emotions were questioned, they would deny their emotions. This typically occurred when participants were distressed in locations considered unsafe, such as when at funerals or school, " … tricking them … pretend to be happy … I don't trust them" (20, male, moderate, below DBC-ASA threshold). However, this strategy was not used when in safe environments. Participants reported expressive suppression was not always an effective emotion regulation strategy, "It doesn't stay that long" (17, female, moderate, above DBC-ASA threshold). Participants also described thought suppression, which at times could be paired with elements of distraction, "You just tell your brain to stop" (14, female, moderate, above DBC-ASA threshold), however, it was acknowledged that this strategy was not always successful, " … sometimes doesn't work" (17, male, moderate, below DBC-ASA threshold).

Additional themes

Themes distinct from the process model domains were identified, specifically, external emotion regulation, limited emotional granularity, limited somatic insight, limited metacognition, and symbolic play.

External emotion regulation

Participants reported receiving support to regulate their emotions from their family, teachers, and friends. This support was externally provided across all five process model domains. These strategies included directing participants to soothing situations, modifying the situation, providing distractions, prompting cognitive restructuring, and providing sensory management such as providing hugs or alone time, and reminding them to take their medication. These efforts were described as, "Help … calm myself down, if I … too upset" (19, male, moderate, above DBC-ASA threshold).

Limited emotional granularity

The participants' ability to describe their emotions was illustrated across three levels. The first level consisted of participants who could identify emotions and used limited descriptive terms (i.e., happy, angry, sad etc). The second level consisted of participants that used less nuanced descriptions such as "Bad day emotions" (22, male, mild, above DBC-ASA threshold), used adverbs to indicate heightened emotions (i.e., "very scared"), or used assistive technology (i.e., communication app; the participant's descriptive words only included: hungry, crazy, sad, happy, and mad). Likewise, one participant was taught to use the blue zone (low mood), green zone (positive emotions), yellow zone (heightened emotions) categories to identify emotions; the context of this skill is unknown. Additionally, this level included participants that mislabelled emotions, and described emotions using non-emotive words (i.e., curious, crying, sleepy etc). The last level included participants that displayed alexithymia, for instance reporting "[I feel] nothing" (13, male, mild, above DBC-ASA threshold), or responded with "I don't know" (20, female, mild, below DBC-ASA threshold) when asked about their emotional state; these responses were consistent even when comprehension was confirmed.

Limited somatic insight

Participants struggled to describe their somatic symptoms in relation to their emotion regulation experiences, their insight is summarised into four levels. The first level consisted of participants that were able to describe their somatic symptoms. The second level included participants able to identify the existence of a general somatic experience across the entirety of their body, but could not pinpoint the location. The third level included the ability to identify the location but not the somatic sensation (i.e., angry face). Lastly, alexisomia was evident, as some participants were unable to identify the location or the somatic symptom.

Limited metacognition

Metacognition is related to cognitive insight, and impacts an individual's capacity to utilise cognitive change. Specifically, participants struggled with cognitive insight, and at times did not use cognitive change. Several participants were unaware of the content of their thoughts, but were able to identify the related emotion, "I don't know what I'm worried about" (20, male, moderate, below DBC-ASA threshold). Participants were able to increase their insight by discussing their concerns with their favourite characters. Reduced insight was also exacerbated when under stress, "I just get annoyed. Just stop thinking in my head" (13, male, mild, above DBC-ASA threshold).

Symbolic play

Participants reportedly used video game or cartoon characters to engage in symbolic play; the process of speaking to the character about their emotions or thoughts. This process facilitated cognitive change, specifically the following cognitive restructuring

sub-themes: "generate alternative/ reframing," "problem solving," and "positive affirmations or mantras," "He'll [character] be like, don't talk shit about yourself. You are [a] beautiful woman" (19, female, moderate, above DBC-ASA threshold). Likewise, symbolic play also facilitated response modulation via the "communication" sub-theme, as this process assisted participants to externalise their internal processing, "I tell batman to help to make me calm down" (20, male, moderate, below DBC-ASA threshold). The participant's historical use of symbolic play is unknown.

Cross comparisons

Differences between participants above and below the DBC-ASA threshold were noted. Specifically, participants above the DBC-ASA threshold had a pattern of reporting: selection acceleration and deceleration, rumination, concentration, cognitive distortions, problem solving, positivity reorientation, perspective taking, aggressive behaviours and external attentional deployment. While participants below the DBC-ASA threshold had a pattern of reporting: positive affirmations or mantras, generate alternative/reframing, and meditation. Of note, while participants above the DBC-ASA threshold tended to report cognitive distortions, both groups similarly reported cognitive restructuring. The remaining sub-themes were relatively comparable between both groups.

Discussion

This study is the first to evaluate the emotion regulation experiences of children and adolescents with intellectual disabilities, through the process model lens. Overall, the thematic analysis supported the relevance of all five domains of the process model (i.e., situation selection, situation modification, attentional deployment, cognitive change, and response modulation; Gross, 2014). In addition to this finding, additional themes distinct from the process model domains were detected, specifically, "external emotion regulation," "limited emotional granularity," "limited somatic insight," and "symbolic play."

Multiple themes and sub-themes intersected and supported the cyclical pattern outlined in the process model, demonstrating how emotion regulation experiences and strategies led to the emergence of new situations (Gross, 2015). Specifically, overlaps occurred between the situation selection and situation modification domains, as modifications could create new situations. Likewise, the situation selection theme and the attentional deployment sub-theme "rumination," overlapped as situation selection was influenced by rumination content. The "rumination" and "worry" sub-themes also overlapped with the reports of cognitive distortions. While the response modulation domain intersected with the situation selection and situation modification domains, as response modulation selections perpetuated and modified situations. The convergence of these themes emphasises the importance of context, as emotion regulation experiences and strategies are not inherently related to specific domains (Gross, 2014). Of note, participants reported using social connections to modify situations as seen in the "security within connection" sub-theme, which transcends the situation modification definition of "modifying external, physical environments" (Gross, 2014, p. 10). These findings are consistent with parent and teacher perspectives (Girgis et al., 2024; Girgis, Paparo, Roberts, et al. 2024), and suggests the scope of the situation modification domain warrants further investigation in order to adequately capture the emotion regulation experiences of children and adolescents with intellectual disabilities.

Themes discernible from the process model domains were identified, including: "external emotion regulation," "limited metacognition," "limited emotional granularity," "limited somatic insight," and "symbolic play." Within the theme of "limited emotional granularity" and "limited somatic insight," participants demonstrated several levels of emotional and somatic insight. This is expected, as individuals with intellectual disabilities typically encounter more challenges generating emotive words compared to non-emotive words (Mellor & Dagnan, 2005). Likewise, limited somatic insight is associated with children with intellectual disabilities (Emck et al., 2012). Symbolic play also aided participants in externalising their thoughts and emotions, a practice linked to increased occurrences of internal state language (Hashmi et al., 2022).

Participants above the DBC-ASA threshold were classified as A-ID, while those below were classified as O-ID. Emotion regulation experiences differed between children and adolescents above and below the DBC-ASA threshold. Specifically, those above the threshold tended to report "concentration," which may be related to the propensity for autistic individuals to engage in special interests and related hyperfocus (American Psychiatric Association, 2022). Those above the DBC-ASA threshold also tended to report cognitive distortions. This may be related to the higher prevalence of emotion dysregulation in A-ID children and adolescents compared to those with O-ID (Bakken et al., 2010). Of note, in a prior study parents with A-ID children had a pattern of reporting expressive suppression – a pattern not observed by parents of children with O-ID (Girgis

et al., 2024) – the current findings indicated the reporting pattern of expressive suppression was comparable between groups. Parents of A-ID children may not have recognised their child's attempt to suppress their emotions to the same degree as parents with children with O-ID. This may be due to miscommunications that commonly occur between autistic and non-autistic individuals (Mitchell et al., 2021). In this context, emotions may be suppressed, and attract the negative effects of this strategy (Geraerts et al., 2006). While simultaneously, the maladaptive strategy remains undetected, due to observers misinterpreting emotional expressions. These trends should be viewed with caution considering the small population size, and varying levels of metacognitive insight.

Overall, the results supported the applicability of all process model domains for children and adolescents with intellectual disabilities. However, this study has four key limitations. The DBC-ASA is not validated for individual's over 18 years old (Brereton et al., 2002), however, alternative valid autism screeners for older adolescents with intellectual disabilities have yet to be developed. Secondly, the perspectives were not corroborated with observations, and reporting may have been influenced by a desire to avoid social stigma. This is particularly relevant, as this group is likely to experience discrimination (Ali et al., 2015). Likewise, communication difficulties may have affected the participant responses. This, in turn, could have influenced the interpretation of the limited somatic insight and limited metacognition themes. As such, these themes might represent expressive language challenges, rather than a lack of insight. Additionally, the relationship between age and emotion regulation could not be assessed due to the small sample size. Lastly, insight into the non-speech using population is limited as only one participant utilised a communication device. A strength of this study is the inclusion of the "voice" of children and adolescents with intellectual disabilities, which is a perspective often not captured. This was made possible due to the following accommodations: parental support, easy read English forms, visual aids, and simplified language. It is vital that future research consider the need for such accommodations in order to capture the lived experience of this population.

This study is the first we know of to directly explore the emotion regulation experiences of children and adolescents with intellectual disabilities, via the process model domains (Gross, 2014). While the overall findings indicate that the process model of emotion regulation is applicable in this population, the situation modification domain parameters require further review in order to capture the breadth of experiences of children and adolescents with intellectual disabilities. Moving forward, attempts should be made to capture the emotion regulation experiences of children and adolescents who use communication devices. Comparisons should also be made between the perspectives of children and adolescents with intellectual disabilities, and parents and teachers (Girgis et al., 2024; Girgis, Paparo, Roberts, et al., 2024). The aggregated themes and subthemes could serve as a foundation to develop a process model-based emotion regulation measure, encompassing a self-report, teacher, and parent version – as such measures are not currently available (Girgis et al., 2021). The current findings could also inform therapies for this population, e.g., therapies could incorporate language development elements, focus on enhancing somatic and metacognitive insight, and build on existing play therapies used in this population (Mora et al., 2018). These therapies could also incorporate the adaptive emotion regulation strategies already in use, while shifting away from known maladaptive strategies such as avoidance, and expressive and thought suppression (Campbell-Sills et al., 2014; Dekker & Koot, 2003; Rudaz et al., 2017).

Conclusion

Collectively, through direct participant perspectives, this study supports the suitability of the process model of emotion regulation to children and adolescents with intellectual disabilities. Further, the model facilitates a more comprehensive understanding of the emotion regulation experiences of this population. This study advances emotion regulation research pertaining to this population, and offers insights that might guide the development of outcome measures and interventions, while amplifying the underrepresented "voice" of children and adolescents with intellectual disabilities.

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Appendix

The COnsolidated criteria for REporting Qualitative research Checklist (COREQ; Tong et al., 2007).

No.	Item	Description	Section #
Domain 1: Research team and reflexivity			
Personal characteristics			
1.	Interviewer/facilitator	Which author/s conducted the interview or focus group?	Method
2.	Credentials	What were the researcher's credentials? *E.g. PhD, MD*	Method
3.	Occupation	What was their occupation at the time of the study?	Method
4.	Gender	Was the researcher male or female?	Method
5.	Experience and training	What experience or training did the researcher have?	Method
Relationship with participants			
6.	Relationship established	Was a relationship established prior to study commencement?	Method
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? *E.g. Personal goals, reasons for doing the research*	Method
8.	Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? *E.g. Bias, assumptions, reasons and interests in the research topic*	n/a
Domain 2: Study design			
Theoretical framework			
9.	Methodological orientation and theory	What methodological orientation was stated to underpin the study? *E.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis*	Method
Participant selection			
10.	Sampling	How were participants selected? *E.g. purposive,convenience, consecutive, snowball*	Method
11.	Method of approach	How were participants approached? *E.g. face-to-face, telephone, mail, email*	Method
12.	Sample size	How many participants were in the study?	Method
13.	Non-participation	How many people refused to participate or dropped out? What were the reasons for this?	n/a
Setting			
14.	Setting of data collection	Where was the data collected? *E.g. home, clinic, workplace*	Method
15.	Presence of non – participants	Was anyone else present besides the participants and researchers?	Method
16.	Description of sample	What are the important characteristics of the sample? *E.g. demographic data, date*	Method
Data collection			
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Method
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?	Method
19.	Audio/visual recording	Did the research use audio or visual recording to collect the data?	Method
20.	Field notes	Were field notes made during and/or after the interview or focus group?	Method
21.	Duration	What was the duration of the interviews or focus group?	Method
22.	Data saturation	Was data saturation discussed?	n/a
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?	n/a
Domain 3: analysis and findings			
Data analysis			
24.	Number of data coders	How many data coders coded the data?	Method
25.	Description of the coding tree	Did authors provide a description of the coding tree?	Results
26.	Derivation of themes	Were themes identified in advance or derived from the data?	Method
27.	Software	What software, if applicable, was used to manage the data?	Method
28.	Participant checking	Did participants provide feedback on the findings?	n/a
Reporting			
29.	Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? *E.g. Participant number*	Results
30.	Data and findings consistent	Was there consistency between the data presented and the findings?	Results
31.	Clarity of major themes	Were major themes clearly presented in the findings?	Results
32.	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Results