



## Teacher responses to anxiety-related behaviours in students on the autism spectrum



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### ABSTRACT

**Background:** At least 50% of students on the autism spectrum experience clinical or subclinical levels of anxiety but there is scant research on how teachers respond to anxiety in children on the spectrum.

**Aims:** To compare teacher responses to anxiety-related behaviour in students who do and do not have a diagnosis on the spectrum using the Teacher Responses to Anxiety in Children (TRAC).  
**Methods and procedures:** Teachers ( $N = 64$ ), predominantly from mainstream primary schools, completed an online survey comprised of a demographic questionnaire and two versions of the TRAC, one for students without autism and one for students with autism.

**Outcomes and results:** Teachers report differences in the way they would likely respond to anxiety-related behaviours observed in students with and without autism. Teachers reported being more likely to use anxiety-promoting responses for students with autism who are showing behaviours indicative of general and separation anxiety, but not when they are showing behaviours indicative of social anxiety. Whilst there was no significant difference in the overall likelihood of use of autonomy-promoting responses between groups, there were differences in the likelihood of using specific autonomy-promoting responses dependent upon diagnosis and type of anxiety.

**Conclusions and implications:** Teachers report they are likely to respond differently to anxiety-related behaviours of students on the autism spectrum but the impact of this on the behaviour of these students is yet to be determined. Professional development is a priority to increase teacher knowledge about anxiety-related behaviours in students with autism and the ways in which teachers' responses may promote or reduce anxiety and autonomy.

### What this paper adds?

There has been a dearth of research into the presentation and impact of anxiety in autism within the school context and little is known about teacher response to anxiety-related behaviour in this population. This study adds to our knowledge of how teachers are likely to respond to anxiety-related behaviour in students with autism and whether this differs from their responses to students without an autism diagnosis. Teachers were found to be significantly more likely to use responses categorised as anxiety-promoting responses with students with autism. The impact of this on student behaviour has not yet been determined and it is possible that, given the categorisation of responses has been based on typically developing children, the impact for students with autism may be

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different. The research highlights the need for professional development to increase teacher knowledge about anxiety in autism and how their responses may impact students' behaviour.

## 1. Introduction

The combination of an increase in the number of children receiving a diagnosis on the autism spectrum (see discussion by Frombonne, 2018) and a move towards more inclusive approaches to education in line with the UN Convention of Human Rights of Persons with Disabilities (United Nations, 2006) has resulted in increased research relating to the experiences of teachers and of students on the autism spectrum. In their recent investigation of the views of primary school teachers, Garrad, Rayner, and Pedersen, (2018) note that understanding teachers' perspectives towards having students on the spectrum in their classrooms is an important prerequisite for supporting successful inclusion. A number of studies have documented predominantly positive views from teachers with respect to inclusive classrooms (Avramidis & Norwich, 2002; Rae, Murray, & McKenzie, 2010) and, more specifically, towards the presence of students on the spectrum in their classrooms (Garrad et al., 2018; Roberts & Simpson, 2016). These positive attitudes are of great significance given that teachers are at the forefront of establishing autism-friendly learning environments and creating a supportive classroom culture (Carrington et al., 2016; Chung et al., 2015; Humphrey & Symes, 2013). Despite teachers' positive views of inclusion, several studies have described teachers anticipating having a student on the spectrum in their classroom as feeling "apprehensive" or "frustrated" about both the potential for disruptive behaviour and the scarcity of time and resources needed to provide adequate support (Anglim, Prendeville, & Kinsella, 2018; Soto-Chodiman, Pooley, Cohen, & Taylor, 2012).

The ways in which teachers' attitudes towards students on the autism spectrum might be reflected in pedagogical practice and teacher responses or behaviour are complex and not yet well understood (Robertson, Chamberlain, & Kasari, 2003; Soto-Chodiman et al., 2012). Knowledge and understanding of autism feature throughout the research in this area as a facilitator for both successful inclusion and positive teacher-student interactions (Anglim et al., 2018; Emam & Farrell, 2009; Roberts & Simpson, 2016; Soto-Chodiman et al., 2012). They have been consistently identified as key factors in teacher responses, including their selection and implementation of appropriate strategies to support students on the spectrum (Anglim et al., 2018; Chung et al., 2015; Saggars et al., 2015; Soto-Chodiman et al., 2012). However, there is comparatively little research focussing on the ways in which teachers' perspectives around autism might impact their day-to-day interactions with individual students and what impact this might have on the students themselves (Chung et al., 2015; Robertson et al., 2003). It is possible that teachers view the behaviours and abilities of individual students on the spectrum through the prism of the autism diagnosis, altering their responses, expectations and teaching strategies to align with what they know about autism (Cameron & Cook, 2013). This would likely entail a lowering of expectations which may lead, in turn, to reduced achievement on the part of students (Ashburner, Ziviani, & Rodger, 2010; Humphrey, 2008). Conversely, it is also possible that teachers may underestimate the impact of autism characteristics on the ability of students to cope with the school environment (Cameron & Cook, 2013), especially if students are good at masking their underlying difficulties. In such a situation, teachers may not respond differently to students on the spectrum and consequently, students may not receive all the support they require and any inability to cope may be misinterpreted as misbehaviour (Cameron & Cook, 2013).

There is therefore a clear need for research to move on from exploring teacher attitudes and begin to explore how teachers actually respond to students on the autism spectrum and whether this differs from how they respond to students without a diagnosis on the autism spectrum. There is also a need for such research to consider aspects other than broad inclusive practices and strategies, for example, exploring aspects of student behaviour or emotional well-being, which can also impact upon a student's educational engagement and outcomes.

### 1.1. Autism and anxiety

Anxiety disorders are now recognised as the most commonly co-occurring condition within autism spectrum disorders. Meta-analyses suggest prevalence rates of clinically significant anxiety of approximately 40% (van Steensel, Bögels, & Perrin, 2011) compared to 13.4% of children worldwide without autism (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). There are also increasing suggestions of high levels of "subclinical anxiety" (elevated anxiety which does not meet diagnostic threshold) which may still impact upon home and school functioning (e.g., Strang et al., 2012; Vasa et al., 2013). In the last decade, there has been increased interest in the emotional well-being of individuals with neurodevelopmental disorders (see reviews by Adams & Oliver, 2011 and Flynn et al., 2017). This increased interest is particularly notable for the research focussing upon the emotional well-being of individuals on the autism spectrum, an area that has seen a six-fold increase in publications in the last ten years (Vasa, Keefer, Reaven, South, & White, 2018). Although it is recognised that for students on the spectrum, the experience and impact of anxiety at school may be exacerbated due to difficulty with social, academic, and sensory demands (Ambler, Eidels, & Gregory, 2015; Ashburner et al., 2010; Tobias, 2009), most of the research around autism and anxiety predominantly focussed upon parental report, with little research exploring the presentation or impact of anxiety in children with autism within the school setting (Adams, Young & Keen, 2019).

Providing a clear diagnostic description of comorbid anxiety in autism can be complex due to the considerable overlap between symptoms of anxiety and associated traits such as, for example, social avoidance and ritualised behaviour (Ambler et al., 2015; Kerns & Kendall, 2012; Liew, Thevaraja, Hong, & Magiati, 2015; Wood & Gadow, 2010). Additionally, the two may be further confounded by the possible amplification of symptoms due to their interaction (e.g., White et al., 2013). As a result, there is limited detailed information on how anxiety may present in the school setting for children on the autism spectrum, and how this may be similar to or different to children without a diagnosis of autism. The complexity of identifying and responding to anxiety in children with autism

may be due to differences in both the triggers and presentation of anxiety. Triggers that are more prevalent for individuals with autism that are not generally seen in typically developing children include sensory overload, disruption of routines, and social confusion (Ozsvadjian, Knott, & Magiati, 2012) and the presentation of anxiety may more often be behavioural than verbal and may differ between home, school, and community settings (Adams, Young, Simpson, & Keen, 2018). These potential differences in both triggers of anxiety and in the way anxiety is experienced by students on the spectrum may mean that within the school setting it goes unidentified, misunderstood as part of their autism characteristics, or misinterpreted as a behavioural difficulty, rather than being reflective of an internal, emotional experience. Given that teacher understanding of (and therefore their response to) anxiety and stress has been identified by students on the spectrum themselves as an important factor in their successful participation in mainstream education (Humphrey & Lewis, 2008; Sagers et al., 2015), it is likely that responses to such anxiety-related behaviours in school could potentially impact upon the anxiety experienced by the student.

### 1.2. Teacher responses to anxiety in typically developing children

In typically developing children, anxiety has been associated with reduced academic achievement, school refusal (Langley, Bergman, McCracken, & Piacentini, 2004; Mychailyszyn, Méndez, & Kendall, 2010; Van Ameringen, Mancini, & Farvolden, 2003), and behavioural problems in the classroom (Headley & Campbell, 2013). Research focusing on anxiety in typically developing children has indicated that different responses to anxious behaviours may have the effect of either promoting bravery and independent problem-solving, or reinforcing and exacerbating feelings of anxiety (Allen & Lerman, 2018). Punitive responses to student behaviour may directly impact feelings of security and acceptance (Allen & Lerman, 2018; Murray, Creswell, & Cooper, 2009). Less obviously, overprotective responses to behaviour, too much assistance, or the reinforcement of avoidance behaviour may also increase rather than ameliorate worry (Allen & Lerman, 2018; Arbeau, Coplan, & Weeks, 2010; Murray et al., 2009). Conversely, offering encouragement, responding in ways that promote problem-solving, and using rewards have been shown to reduce anxiety in students over time (Allen & Lerman, 2018; Murray et al., 2009). In their investigation into teachers' responses to student anxiety, Allen and Lerman (2018) identified three anxiety-promoting response types (overprotection, sanction, and avoidant reinforcement) and three that promoted autonomy (reward, encouragement, and problem-solving). They found that teachers responded differently to different types of anxiety, using autonomy-promoting strategies more often in response to generalised and social anxiety than to separation anxiety. Allen and Lerman concluded that this may have been due to the difficulty of managing separation anxiety symptoms (tantrums and crying) in the classroom setting.

### 1.3. Study aims and research questions

To date, no work has been undertaken to explore how comorbid anxiety and autism may pertain to teaching practice, pedagogy, or teacher responses to student behaviour. There has also been no research into whether teachers report using the same anxiety- and autonomy-promoting strategies for students who are and who are not on the autism spectrum. The aim of this study was therefore to examine teacher responses (both autonomy promoting and anxiety promoting) to anxiety in students with autism and whether these differ from the responses they report for anxiety-related behaviours in students without a diagnosis of autism. Understanding how teachers respond to anxious behaviours specifically in students with autism will further our systemic understanding of autism and anxiety in the school setting and potentially inform future training, development, and support. Whilst the same terms of “anxiety-provoking” and “autonomy-promoting” will be used to describe the teacher responses for children with and without autism, it is acknowledged that (a) to date, there has been no research exploring if these responses have the same anxiety- and autonomy-promoting effects on anxiety in children with autism as they do for children without a diagnosis of autism and (b) this study only asked teachers about their likelihood of responding with a particular action and does not measure child response to teacher response.

No hypotheses were made regarding responses to anxiety-related behaviours in students with autism due to the lack of theory and research on this topic. In order to meet the aims of the study, the following research questions were asked:

- 1 Do teachers report responding in the same way to anxiety-related behaviours in students with and without a diagnosis of autism?
- 2 If different responses are reported, do teachers report differences in the likelihood of responding with specific autonomy-promoting or anxiety-promoting responses for students with and without a diagnosis of autism?

## 2. Methods

Ethical clearance for this study was granted through the Griffith University Human Research Ethics Committee, approval number 2017/958.

### 2.1. Recruitment procedures

Teachers were recruited through social media posts published through the research centre account and shared by individuals, organisations, and support groups. In total, 99 teachers began the survey and 64 completed at least 85% of the items across all of the questionnaires described below. There was no significant difference in gender ( $\chi^2(1) = .23, p = .63$ ), number of years as a teacher ( $t(89) = -.44, p = .67$ ), number of years in current role ( $t(90) = -.60, p = .55$ ), number of years working with children with autism ( $t(92) = -.66, p = .51$ ), or the number of students with autism that they recall working with ( $t(92) = -.49, p = .62$ ) between those who

**Table 1**  
Teacher Demographics and Experience.

Demographic variables	Total sample ( <i>N</i> = 64) <i>N</i> (%)
Gender	
Female	58 (90.6)
Male	6 (9.4)
Years teaching experience	
≤ 2 years	4 (6.3)
3-5 years	10 (15.6)
6-10 years	14 (21.9)
≥ 11 years	36 (56.3)
Years teaching children with autism	
≤ 2 years	1 (1.6)
3-5 years	13 (20.3)
6-10 years	21 (32.8)
≥ 11 years	29 (45.3)
Number of children with autism worked with (directly)	
2-4 children	3 (4.7)
5-9 children	10 (15.6)
10-19 children	11 (17.2)
20-49 children	21 (32.8)
50+ children	19 (29.7)

did and did not complete the questionnaire.

## 2.2. Participants

The final sample comprised of 64 teachers, who described themselves as general education teachers (59.4%), special education teachers (29.7%), or Head of Special Education (10.9%). Sixty (93.7%) of the teachers worked in mainstream schools and four (6.3%) in special schools. Demographics of teacher informants are provided in Table 1. Almost all of the teacher respondents were female. There was a range in teachers' experience (range 1.25–48 years,  $\bar{x}$  = 14.7 years,  $SD$  = 10.8) and the number of years' experience in teaching children with autism (range 2–40 years,  $\bar{x}$  = 11.4 years,  $SD$  = 7.6). The minimum number of students with autism that the teacher estimated that they had directly worked with was two and the mean across the group was 91.25. Teachers were asked to state which year level(s) they currently taught. Based upon these answers, 51 (79.7%) taught grades within primary school and 13 (20.3%) taught grades within secondary school.

## 2.3. Measures

### 2.3.1. Teaching staff characteristics

A background questionnaire was used to collect information regarding each teacher's gender, educational setting, current role, years teaching experience, and experience of working with children with autism.

### 2.3.2. Teacher responses to anxiety in children (TRAC; Allen & Lerman, 2018)

The TRAC was developed as a theoretically informed, "top-down" method of assessing responses to children's anxious behaviours. Modelled on the Coping with Children's Negative Emotions (CCNES) questionnaire, the TRAC consists of nine hypothetical scenarios, depicting aspects of the three most common forms of anxiety in children: generalised anxiety/worry, social anxiety and separation anxiety. Example scenarios are "If a child in my class is asked to learn a new skill (e.g., calculation method) and looks visibly worried, I would..." (generalised anxiety/worry), "If a child looked scared when asked to speak in front of the class, I would..." (social anxiety) and "If a child was crying after arriving at school away from his/her parents, I would..." (separation anxiety). For each scenario, teachers are asked to rate the likelihood (from very unlikely [1] to very likely [7]) of responding in each of six possible ways, with each response representing a theoretically different way of responding to children's anxious behaviours.

The TRAC can be scored into two subscales: Anxiety-Promoting responses and Autonomy-Promoting subscales. The responses within the Anxiety-Promoting responses include those which reinforce the anxious behaviour, those which promote overprotection of the child, and those involving the use of sanctions and criticism. The responses within the Autonomy-Promoting subscales are the promotion of problem-solving skills, encouragement to face fears, and rewarding of independence or bravery. The scale and its scoring are available online at: <https://shineresearchlab.wixsite.com/home> or in Allen and Lerman (2018).

As this study used two versions of the TRAC (the TRAC and the TRAC-ASD, described below), to ensure that teachers were aware that this version of the TRAC was focussing upon children without a diagnosis of autism, it was introduced with "The next section asks questions about how you would respond to a student without a diagnosis of autism in your classroom". The remainder of the instructions and questions were as per the published questionnaire.

### 2.3.3. Teacher responses to anxiety in children – autism spectrum disorders (TRAC-ASD)

Following consultation with the authors of the TRAC, the TRAC was modified to focus upon responses to a child with autism by amending the instructions and wording of the scenarios from “a child” to “a child with autism” (e.g., “if a child in my class was worried...” became “if a child with autism in my class was worried...”). All the scenarios and response options remained identical.

## 2.4. Procedure

The invitation for the study provided a link which took teachers through to the information sheet, consent form, and the online survey platform (LimeSurvey). All questionnaires were completed online and all questions were optional (allowing participants to refrain from responding if they chose). Participation was anonymous to encourage teaching staff to be open and honest in their responses. All participants completed the demographics section first. In order to reduce any order effects of the questionnaire presentation, the order of the TRAC and TRAC-ASD was randomised, where half of the participants were presented with the TRAC before the TRAC-ASD and the other half the TRAC-ASD and then the TRAC.

## 2.5. Data analysis

Data were screened for outliers and meeting the assumptions of parametric analyses. Missing value analysis of each item for the TRAC and TRAC-ASD suggested that data were missing completely at random (Little’s MCAR test; TRAC  $\chi^2(83) = 655.4, p = .19$ ).

Means and standard deviations were calculated for the responses to children with and without autism. Paired *t*-tests were used to compare TRAC and TRAC-ASD subscale scores for both anxiety-promoting and autonomy-promoting responses. Paired *t*-tests were then used to explore teacher-reported likelihood of responding with specific behavioural responses (overprotection, sanctions and criticism, avoidant reinforcement, problem-solving, encouragement, and rewarding of independence or bravery) within the subscales. Cohen’s *d* was calculated as an estimate of effect size, with .2 representing a small effect size, .5 a medium effect size, and .8 a large effect size. Alpha was set to .005 to balance between the risk of a Type I and Type II error, i.e. to control for the multiple comparisons conducted whilst allowing for exploratory analysis within this new research area.

**Table 2**  
Mean scores and comparisons for teacher responses on the TRAC and TRAC-ASD.

Subscale/response	N	Student with autism Mean (sd)	Student without autism Mean (sd)	<i>t</i>	<i>p</i>	<i>d</i>
<b>General Anxiety/Worry</b>						
Anxiety-promote	53	28.0 (6.3)	25.6 (6.2)	3.7	<u>.001</u>	.50
Overprotective	56	10.6 (4.0)	8.9 (3.2)	4.2	< <u>.001</u>	.56
Sanctions and criticism	60	4.1 (1.8)	5.2 (3.0)	-3.3	<u>.002</u>	.43
Avoidant reinforcement	60	12.8 (3.0)	11.3 (2.7)	3.5	< <u>.001</u>	.58
Autonomy-promote	53	44.8 (7.4)	43.3 (7.4)	2.3	.03	.31
Encouragement	60	16.0 (3.8)	18.2 (2.7)	-6.6	< <u>.001</u>	.85
Reward for bravery	55	11.1 (4.3)	8.3 (4.5)	7.2	< <u>.001</u>	.98
Problem Solving	60	17.5 (2.3)	16.6 (2.1)	3.1	<u>.003</u>	.40
<b>Separation Anxiety</b>						
Anxiety-promote	55	24.8 (5.4)	22.9 (5.6)	4.2	< <u>.001</u>	.56
Overprotective	57	12.6 (3.4)	11.8 (3.5)	2.5	.02	.33
Sanctions and criticism	56	3.4 (1.3)	3.9 (1.9)	-2.7	.008	.37
Avoidant reinforcement	56	8.9 (3.1)	7.3 (3.0)	5.1	< <u>.001</u>	.68
Autonomy-promote	55	43.5 (7.1)	43.7 (6.3)	-.47	.64	.06
Encouragement	58	17.6 (3.4)	18.4 (2.8)	-2.9	<u>.005</u>	.38
Reward for bravery	55	6.7 (4.2)	6.0 (3.9)	2.0	.05	.27
Problem Solving	59	19.3 (2.1)	19.4 (3.1)	-.48	.63	.06
<b>Social Anxiety</b>						
Anxiety-promote	56	25.6 (5.3)	25.9 (6.5)	-.47	.64	.06
Overprotective	57	10.7 (2.9)	10.7 (3.3)	.16	.87	.02
Sanctions and criticism	59	3.4 (1.0)	4.6 (2.0)	-4.7	< <u>.001</u>	.62
Avoidant reinforcement	62	11.6 (3.7)	11.1 (4.7)	1.4	.17	.18
Autonomy-promote	58	47.3 (5.7)	49.0 (5.1)	-2.6	.01	.34
Encouragement	63	17.5 (3.2)	19.3 (2.4)	-5.7	< <u>.001</u>	.72
Reward for bravery	58	10.6 (2.7)	10.5 (2.8)	.33	.75	.04
Problem Solving	63	19.1 (2.2)	19.2 (2.2)	-.42	.67	.05

### 3. Results

#### 3.1. Anxiety-promoting responses

##### 3.1.1. Anxiety-promoting subscale

Teacher ratings of the likelihood of responding to the students with or without autism with specific responses are summarised in Table 2 (a higher score reflects an increased likelihood of responding with that specific response with a maximum score of 7 representing “very likely”). Comparisons of the anxiety subscale scores indicate that teachers were significantly more likely to respond with anxiety-promoting responses to a student with a diagnosis of autism than a student without a diagnosis of autism for behaviours indicative of general anxiety ( $p < .001$ ,  $d = .50$ ) and separation anxiety ( $p < .001$ ,  $d = .56$ ), both with a medium effect size. However, this did not hold for the social anxiety subscale, where there was no significant difference in responding to students with and without a diagnosis of autism ( $p = .64$ ,  $d = .06$ ).

##### 3.1.2. Specific anxiety-promoting responses

Significant differences were noted on the types of anxiety-promoting responses reported. Teachers were more likely to report overprotective responses in response to the general anxiety subscale score ( $p < .001$ ,  $d = .56$ ) for students with autism. Teachers were also more likely to use avoidant reinforcement responses with students with autism in response to general anxiety ( $p < .001$ ,  $d = .58$ ) and separation anxiety subscale scores ( $p < .001$ ,  $d = .68$ ), both with medium effect sizes.

Teachers reported a decreased likelihood of responding to students with autism with responses that involved sanctions and criticism in response to behaviours indicative of general anxiety ( $p = .002$ ,  $d = .43$ ) and social anxiety ( $p < .001$ ,  $d = .62$ ).

Teachers did not report any difference in the likelihood of responding with overprotective responses for separation ( $p = .02$ ,  $d = .33$ ) or social anxiety related behaviours ( $p = .87$ ,  $d = .02$ ), avoidant reinforcement for social anxiety ( $p = .17$ ,  $d = .18$ ), or sanctions and criticism for separation anxiety ( $p = .008$ ,  $d = .37$ ).

#### 3.2. Autonomy-promoting responses

##### 3.2.1. Autonomy-promoting subscale

There were no significant differences in the likelihood for responding with autonomy-promoting responses between the two groups on the general anxiety ( $p = .03$ ,  $d = .31$ ), separation anxiety ( $p = .64$ ,  $d = .06$ ), or social anxiety subscales ( $p = .01$ ,  $d = .34$ ).

##### 3.2.2. Specific autonomy-promoting responses

Significant differences were noted on specific autonomy-promoting responses. Teachers reported an increased likelihood of responding to students with autism with responses that reward bravery ( $p < .001$ ,  $d = .98$ ) and promote problem-solving ( $p = .003$ ,  $d = .40$ ) in the general anxiety subscale only. There were no differences on the likelihood of these response types for the separation anxiety subscale, or social anxiety subscale.

Teachers reported a decreased likelihood of responding to students with a diagnosis of autism with encouragement in response to all three anxiety subtypes: general ( $p < .001$ ,  $d = .85$ ), separation ( $p = .005$ ,  $d = .38$ ), and social anxiety ( $p < .001$ ,  $d = .72$ ).

### 4. Discussion

This is the first study to explore teacher responses to anxiety-related behaviours in students with autism and compare how these may differ from responses to students without a diagnosis of autism. The findings from this study clearly show that teachers are, in many ways, likely to respond to anxiety differently when a student has a diagnosis of autism compared to students without autism. One of the principal areas of difference was the greater likelihood that teachers would use anxiety-promoting strategies with students with autism for presentations indicative of general anxiety and separation anxiety, but not social anxiety. The types of anxiety-promoting responses more commonly used when the student had autism was avoidant reinforcement (for both general anxiety and separation anxiety) and overprotection (for general anxiety only). Teachers report being less likely to use one anxiety-promoting response for students with autism; sanctions and criticism.

For autonomy-promoting responses there were two notable differences between responses for children with and without a diagnosis on the autism spectrum. Teachers reported being less likely to use encouragement for students with autism across all anxiety subscales. They also reported being more likely to reward bravery and encourage problem-solving in children with autism but only in relation to the general anxiety subscale.

There are a number of possible explanations for why teachers may respond differently to students with anxiety when they also have a diagnosis of autism, all of which require further exploration using more detailed, qualitative methods. Despite the high prevalence of anxiety in autism and the acknowledgement that this anxiety may present differently in different settings (Adams, Young et al., 2018), there is a lack of research detailing the profile of anxiety symptomatology in students with autism at school (Adams et al., 2019). While there is evidence to suggest that teachers are relatively accurate in identifying and understanding anxiety in typically developing students (Headley & Campbell, 2013), this ability may not translate to identifying anxiety in students with autism. This may mean that many teachers do not feel confident in making informed decisions about what are age-appropriate or autism-related behaviours and what are normal variations of behaviour and/or mental health within the context of autism (Kerns &

Kendall, 2012; Wood & Gadow, 2010). Additionally, some teachers already report feeling apprehensive, or ill-prepared, to support students with autism in their classrooms (Anglim et al., 2018; Soto-Chodiman et al., 2012), and anxiety may further complicate efforts to gain an understanding of these students' support needs.

Another possible explanation is that teachers are concerned that by encouraging students with autism to face their fears in the classroom, there may be an escalation of the anxious behaviour. As Allen & Lerman, 2018 suggest when discussing the findings of their study, teachers may be reluctant to press a student who is likely to become distressed or exhibit challenging behaviours. It is possible that teachers with an awareness of the potential difficulties students with autism can have with emotional and behavioural self-regulation may be more reluctant to engage with students in ways that may result in a negative experience and/or “meltdown” for the student. This fear of a potentially negative outcome may begin to explain why teachers in this study were more likely to act to protect children with autism from experiencing anxiety-related events, allowing them to avoid situations that may evoke anxiety, and less likely to encourage them to face their fears. This may result in a mutual reinforcement for both the student and the teacher, similar to that seen in the literature relating to behaviour that challenges (e.g., Oliver, 1995) and within separation anxiety dyads (e.g., Silove & Rees, 2014). As this study only explored teacher responses, and not their reasons for these responses nor child responses to the teacher response, further work is needed in this area to provide support for or against such hypotheses.

Although teacher responses differed for general anxiety and separation anxiety between the two groups, teachers tended to report more similarities in the likelihood of their responses to social anxiety behaviours between students on the autism spectrum and typically developing students. Teachers reported being less likely to sanction or criticise a child on the autism spectrum for showing social-anxiety-related behaviours, but were also less likely to encourage them to face their fears. This may be linked to teacher perceptions of social anxiety in students with autism more generally. There are discussions in the literature as to the accuracy of identifying symptoms of social anxiety in individuals on the autism spectrum (see Pellecchia et al., 2016). Social anxiety is diagnostically distinct from more generalized anxiety, in that the anxiety is specific to social interactions with known and unknown individuals (see Gadow & Sprafkin, 2002). Adams, Simpson, and Keen, (2018) reported that teachers recognise more general anxiety symptoms in children with ASD than social anxiety symptoms. It could be that teachers interpret worry about social interaction as a consequence of a skill deficit related to autism and that teachers may have been rating their responses “relative” to their expectations and experiences for children on the autism spectrum. That is, there may have been some diagnostic overshadowing impacting upon teacher ratings for questions in the social anxiety subscale. A large proportion of evidence-based interventions for students on the spectrum are focussed on developing social communication skills (National Autism Center, 2015; Wong et al., 2015). This could have an additional impact upon teachers' behaviour towards students experiencing social anxiety, with teachers perhaps having greater confidence in their abilities to respond in ways that encourage autonomy. For primary school teachers, particularly those working with younger students, developing social communication skills may be a priority for the whole class, and strategies to encourage and promote social interactions could be a central part of daily teaching practice, which results in less between-group differences within this subscale.

More than half of the students with autism in schools have anxiety at both clinical and subclinical levels, with onset as early as five years of age (Keen, Adams, Simpson, den Houting, & Roberts, 2017) with such elevated levels persisting into early adolescence (den Houting, Adams, Roberts, & Keen, 2018; den Houting, Adams, Roberts, & Keen, 2018) and increasing into adolescence (van Steensel & Heerman, 2017). It is therefore important that teachers possess good knowledge about both anxiety-related behaviours and ways in which their own behaviour may promote or reduce anxiety or autonomy. The present study findings could inform future professional development for teachers by highlighting the need for increased knowledge and use of autonomy-promoting strategies for students with autism and anxiety. To this end, the TRAC could be a useful tool for identifying the frequency of specific responses across different forms of anxiety. As suggested by Allen & Lerman, 2018, it could also be used as a pre/post-test to measure the effectiveness of professional development efforts.

Autonomy-promoting and anxiety-promoting responses used in the TRAC have been identified through extensive exploration of the cognitive and behavioural bases of anxiety as well as the impact of teacher and parent responses to anxiety. This has led to a strong theoretical basis for understanding the impact of various ways of responding to anxiety in typically developing children (summarised in Allen & Lerman, 2018). However, it is important to remember that the TRAC, and its categories of autonomy-promoting and anxiety-promoting responses, was developed based on typically developing populations. Research is needed to determine if teacher responses to anxiety-related behaviours of students with autism have the same impact for this population of children. With increased knowledge of how aetiology of neurodevelopmental disorders can impact upon cognition, emotion and behaviour (Oliver et al., 2013; Oliver, Woodcock, & Adams, 2010), there is evidence to suggest that factors associated with anxiety in typically developing children have differing relationships with mental health in children with autism. In their review, Cai, Richdale, Uljarević, Dissanayake, and Samson, (2018) note that emotion regulation strategies may be similarly classified as adaptive or maladaptive for children with and without autism, with the exception of avoidant strategies and depression. Avoidant strategies are predictive of increased depression in children without autism (e.g., Seiffge-Krenke & Klessinger, 2000) but in both cross-sectional and longitudinal studies of children with autism (Pouw, Rieffe, Stockmann, & Gadow, 2013; Rieffe, De Bruine, De Rooij, & Stockmann, 2014), higher levels of avoidant strategies have contributed to fewer depressive symptoms. This potential presence of differing mechanisms contributing to mental health in autism, coupled with the recognition that children with autism may experience both typical and atypical forms of anxiety (Kerns & Kendall, 2012), means that caution needs to be applied before assuming that findings are transferable between children with typical development and children with autism. Further research is therefore needed to determine if the range of adult responses identified in the literature to date have a similar autonomy-promoting or anxiety-promoting impact on anxiety in autism.

#### 4.1. Limitations and future directions

Although this study provides some insights into teacher ratings of responses to students with and without autism showing anxiety-related behaviours, several limitations must be taken into consideration when interpreting the results. First, the results are based on questionnaire ratings of perceived likelihood of responding a particular way, and as such, actual teacher responses to these anxiety-related behaviours have not been observed. It may be that teacher responses are influenced by social desirability, for example, reporting a low level of likelihood of using sanction responses (e.g. “Tell the child if he/she doesn’t calm down, he/she will miss out on a fun activity”). However, the interesting aspect in relation to sanctions and criticism responses is in the group differences rather than the likelihood score, with teachers reporting a lower likelihood of using sanctions and criticism for children on the autism spectrum for general anxiety, social anxiety but not for separation anxiety. Responses may also have been influenced by teacher’s beliefs about anxiety, autism, or the combination of the two. Secondly, teacher’s knowledge and understanding of autism or anxiety nor their confidence of working with children on the autism spectrum were not assessed within this study. Future research exploring teacher responses to anxiety or other internalising experiences should measure these teacher-factors and explore their impact within the analyses.

There is also potential a methodological limitation related to the representativeness and generalizability of the sample. The sample was predominantly female, and was recruited through social media channels, which may have resulted in teachers who have a specific interest in autism and/or mental health issues being most likely to respond to the survey. The sample also included a number of secondary school teachers and the TRAC was developed and evaluated using data from primary school teachers. Given the increased prevalence of anxiety disorders with age, future studies may wish to explore the development of a TRAC for secondary school aged children.

#### 4.2. Conclusions

Teachers are reporting that they are likely to respond differently to the anxiety-related behaviours of students with, compared to those without, autism. Patterns of responding also differed across different types of anxiety and there were also some differences at the item level in relation to specific autonomy-promoting and anxiety-promoting responses. Research is urgently needed to investigate the impact on student behaviour of these different patterns of responding so that effective professional development can be offered to teachers who support student with autism at school.

#### Conflict of interest

The authors declare that they have no conflict of interest.

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