What teachers do not know

The emotional experience of Autism Spectrum Disorders

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Abstract— It has been widely recognised that people with Autism Spectrum Disorders (ASDs) are impaired in their capacity to understand the mental states of others [1, 2]. Recent research [3] extends the range of impairment to an inability to recognise mental states within themselves. The current study revisits this issue by investigating the emotional experience of secondary and post-secondary school students with ASDs. Alternative communication modes and self-determination were adopted to address current criticisms regarding the exclusion of the voices of those with ASDs. Teachers' understanding of students' emotions were sought to see if 'mindblindness' is unique to those with ASDs. Findings urge educators, researchers and the general community to reflect on their attitudes towards the disabled.

Keywords—Autism Spectrum Disorders, Theory-of-Mind, emotions, subjective experience, objective understanding, views of disability

I. INTRODUCTION

Do individuals with Autism Spectrum Disorders (ASDs) know that other people have mental states such as thought, desire, feeling and belief? Baron-Cohen, Leslie and Frith [1] raised this question over twenty years ago. They concluded that those with ASDs have a 'deficit' in understanding the mental states of others, or 'mindblindness' [5, 6]. This has been confirmed by subsequent studies [2, 7]. These studies into the capacity to know what others think or feel were initiated by Premack and Woodruff [8], who used the term Theory-of-Mind to refer to the ability to impute mental states to self and others. Since its introduction, Theory-of-Mind has been intensively studied in various disciplines and has made contributions to the explanation of children's developmental trajectories [9] and the social-cognitive difficulties of people with ASDs [10].

Theory-of-Mind studies, however, have been criticised for excluding the voices of people with ASDs. Smukler [11], father of a son with ASDs, urges researchers to listen carefully to those with ASDs when studying their minds. Leuder, Costall and Francis [12] suspect that different ways of studying the Theory-of-Mind of people with ASDs may result in different findings (see [13] for methods of studying Theory-of-Mind). Together, these criticisms point to the need to develop accounts of communication which will allow the voices of people with ASDs to be heard [11, 12], and so help encapsulate the complexities of the experience of people with disability [14]. Bovee [15], an adult with ASDs, furthers this criticism. He sees a power imbalance in the assumption found underlying Theory-of-Mind studies, that is, if people with ASDs do not know what

people without ASDs think or feel this is seen as a problem, while the opposite is not.

One recent study [3] has reported that people with ASDs lack the ability to recognise mental states within themselves, while another [4] disputed this finding on based on sound emotional understanding found within self and others. The current study seeks to clarify this issue by investigating the emotional experience of people with ASDs. How do we know whether or not people recognise mental states, such as emotions, within themselves? One way is through self-reports about their emotions, as the communication of an emotion entails its recognition within oneself.

While enquiring into the emotional experience of people with ASDs, this study attempts to address current criticisms regarding the exclusion of the voices of people with ASDs. Inclusion of their voices requires accommodation to their particular communication needs, which are inherent features of ASDs [16]. This study therefore adopts alternative modes of communication, such as writing and pointing, rather than simple reliance on speech [17], and uses concrete materials such as drawings to assist communication of emotions [18]. To more fully meet the communication needs of these students, this study practises self-determination, taking control over one's own life [19], by providing a choice of preferred mode of communication. Furthermore, the comments of Bovee [15] are addressed by comparing emotions as subjectively experienced by students with ASDs with those same emotions as objectively understood by significant others without ASDs, that is, their teachers. This study aims to answer the following research questions.

1. How do students with ASDs experience emotions?
2. How do the teachers of these students understand their students' emotions?
3. What are the similarities and differences between the emotions of students with ASDs as subjectively recognised and experienced by them and as objectively understood by their teachers?

II. METHODS

A. Participants, settings and ethical considerations

As part of a larger study investigating the Theory-of-Mind of students with ASDs from their own perspective and those of their teachers, this study was conducted in three special schools

in Seoul, Republic of Korea, which catered for students with ASDs and emotional disorders. Student participants were identified by school personnel as meeting three criteria; diagnosis of ASDs, ability to read and write, and above senior secondary school age. These last two criteria were chosen to facilitate in-depth interviews that aimed to draw out their inner experience. More information on participants, including quantitative and qualitative descriptions of the diagnosis of ASDs, is provided elsewhere [20].

Families of 20 secondary and post-secondary school students (CA mean 17:2, ranged from 15:4 to 19:10) consented to participate in this study. All student participants were male and demonstrated different degrees of intellectual abilities. According to the Korean-Wechsler Adult Intelligence Scale (K-WAIS) [21], 12 of 20 student participants showed an IQ score below 45, the lowest score. The highest score was 77 and seven students showed between 49 and 56. This feature reflects the fact that approximately 75 per cent of people with ASDs also have intellectual disabilities [22].

The teachers of student participants also took part in this study. Of 11 teacher participants, seven were female and four were male. A majority of teachers were in their 30s and had more than seven years of teaching experience. All had completed a BA in special education that qualified them as special education teachers. While six teachers had more than one student participant, the remaining five had one student participant each. This study was approved by the Human Research Ethics Committee (HREC) of the University of Sydney. All names used in this study are pseudonyms.

B. Data collection and analysis

Data collection methods included in-depth interviews with both students and teachers, and review of documents produced by students (e.g., diaries) and teachers (e.g., Individualised Education Programs (IEP) and Individualised Transition Programs (ITP)). To contextualise questions for student participants, drawings were used as visual aides; 1) four drawings of faces depicting the emotions of happiness, sorrow, anger and fear, and 2) four drawings accompanied by scenarios calling for a response appropriate to one of the four emotions. These drawings and scenarios were selected by five special education teachers, taking cultural relevance into consideration, from the intervention workbook, *Teaching children with autism to mind-read: A practical guide for teachers and parents* [18].

Practising the concept of self-determination to empower students, student participants were invited to choose between speaking and writing as their mode of communication. Body gestures, such as pointing, were considered as part of both. Word cards with interview questions were used for students who preferred spoken communication. To assist written communication, an interview booklet was created from the questions. For example, the question "How do you feel when your mum is sick?" was written as the self completion statement, "When my mum is sick, I feel () (see [20] for the list of self completion statements). The interviews with teacher participants began with conversation concerning preliminary information about the students (e.g., family, medical and education backgrounds) and moved on to teachers'

observations and understanding of their students' experience of emotions.

For document review, student produced documents were sought to establish a broader context of subjective experience related to emotions and to triangulate data gained from in-depth interviews [23]. Teacher produced documents, IEPs and ITPs, were sought to supplement the information provided in interviews. As a result, diaries and study papers created by three students, and four IEPs/ITPs, were collected and transcribed in verbatim for analysis.

The data from in-depth interviews and document review were analysed through a grounded theory approach [24]. A thorough reading of the data was followed by coding, a repetitive process of reading, reflection and naming data. Coding was applied to the data line by line, transforming raw data into theoretical constructions [25]. Codes were grouped according to their similarities and differences. Grouped codes made up categories, and categories emerged into hierarchies. The data from students and teachers were analysed separately and findings from each analysis were compared for commonalities and disparities.

III. RESULTS

Student participants communicated about their emotions linguistically, from a single word to a short phrase or sentence. While most of their expression was found to be social, or understandable by others, some was private, or difficult to understand within a given social context. Students talked more often about unpleasant emotions than pleasant ones. In doing so they used more words, and more sophisticated words, to describe unpleasant rather than pleasant emotions. Together these indicate that students with ASDs are more sensitive to the recognition of unpleasant emotions in themselves and express them more fluently. However, these patterns of emotional experience were not clearly recognised by their teachers. While teachers generally believed that their students experience emotions, this belief tended to be limited to simple emotions (e.g., happiness and anger). The next section discusses these results in detail.

A. Question 1: Recognising Emotions in Self

As shown in Table I, students recognised various emotions in self. The emotion most frequently mentioned by students was 'good' feeling, followed by 'sad', 'bad', 'frightened', 'angry' and 'love'. Of the 20 students, 19 talked about feeling 'good'. They felt good in various situations, such as being alone, being with friends, watching soccer games at stadiums, seeing building cranes and cars, playing the violin, and being praised. The majority also felt 'good' when their desires for things such as food, money, and places were fulfilled.

TABLE I. EMOTIONS RECOGNISED BY STUDENTS IN SELF

Emotional tone	Students experienced
Pleasant	Excited, fun, glad, good, happy, joy, like, love
Unpleasant	Angry, bad, cranky, cross, distressed, frightened, hard, hate, not good, sick of it, sick, sad, sulky, tired, unpleasant, vexation

Students spoke more often about unpleasant emotions than pleasant ones. They recognised 'sad' feelings in themselves in situations such as listening to music they did not like, being exposed to shouting, being tired, being struck by classmates, and their mother or friend being sick. Chris, a 17-year-old secondary school student, talked about weeping on the footpath with his mother because something sad happened to him that he could not explain. 'Bad' feelings were reported in relation to being angry, being hit by friends, being alone, imagining losing mother at a supermarket, having crying friends and having a sick mother.

Students felt 'frightened' when being angry, watching a horror movie, being attacked by other students in the school bus, being punished by father, and being on an amusement park ride. Students also felt 'love' for themselves, family members (especially their mother), their class teacher, their researcher and a girl friend.

Some of the unpleasant feelings students recognised within themselves invite closer investigation. Feeling sad when their mother or a friend is sick, or recognising discomfort in self when having a crying friend or sick mother, meets the definition of empathy, an emotional response more congruent with another's emotion or situation than one's own [26]. These responses were reported by the majority of students, with slight variations of unpleasant feelings such as 'frightened', 'sad', 'don't like' or 'bad'. These emotional responses have in common the fact that they stem from another's emotional state or condition. In other words, students stepped out of their own emotion to enter into and share another's emotional state.

While the majority of students' emotional responses were understandable by others, some were private, difficult to understand within the social context. These took the forms of difficulty in empathy, physically expressed emotion, and absence of emotional expression. Regarding difficulty in empathy, asked how he feels when his mother is sick Brett first said 'good' and after a long pause and inner struggle said, 'frightened'.

Some students attended to the physical features related to emotion rather than to the emotion itself. For example, in the case of the four drawings illustrating the fundamental emotions of happiness, sorrow, anger and fear, the happy face was recognised as 'smile feeling' and the sad face as 'crying feeling'. The drawing of the frightened face was recognised as 'grandfather' because the wrinkles on the face were perceived as signifying age. Sometimes students avoided a direct expression of emotion. For example, asked how he feels when his mother is sick, Edward said 'Headache.' Michael and Paul replied to questions concerning emotions by repeating part of the question.

These patterns of response were investigated through constant comparison. This included repetitive readings, reflecting and comparing them with other codes and categories to find the core features that explain the variety of students' emotional experiences. From this process, two types of movement of mind were identified, called logical and associational. A logical movement of the mind follows socially shared trajectories. Emotional experience dominated by logical movement therefore tends to be comprehensible to others. An

associational movement of the mind demonstrates a trajectory confined within the self, and emotional experience dominated by this movement tends to be incomprehensible to others. These two types of movement of mind are fully explained elsewhere [20].

The majority of students' responses related to their own emotional experience were found to be dominated by logical movements of mind. For example, David said he would feel angry if his pen was taken, a scenario provided by one of the drawings. His feeling of 'anger' was directly caused by 'his pen taken away', with a clear causal relationship between the two. This is comprehensible to others. Some responses, in contrast, appeared to be odd or incomprehensible. These can be explained by the concept of an associational movement of mind. The following example is from the interview with Brett, a 17-year-old secondary student.

Interviewer: When do you feel joy?

Brett: Sad (1).

Interviewer: When do you feel sad?

Brett: Joy (2)

Brett's first response, 'sad' (1), seemed to be associated with the word 'joy' in the first question, and the second response 'joy' (2) seemed to be associated with the word 'sad' in the second question. This example indicates that his answers were generated by associational rather than logical movements of the mind. Another example came from Patrick, who answered 'angry' to the question 'When do you feel pleasant?' These responses seemed to be produced by him selecting some part of the question and associating from this (e.g., 'sad' with 'joy' and 'joy' with 'sad').

Students whose emotional recognition was often characterised by associational movement could speak of their own emotions, but with a very limited vocabulary. For example, Joshua communicated his anger by demonstrating it in body language, naming his teacher, naming his teacher's role (i.e., 'computer teacher'), and saying 'Anger!', 'Hate!' While he could not verbalise the reasons for his distress, he was able to demonstrate his experience of anger.

B. Question 2: Teachers understanding of their students' emotions

Teachers reported that almost all of their students experienced anger, and a majority experienced happiness, sorrow, frustration and fear. Students also showed contentment, love, enjoyment, laughter and excitement, as well as irritation, disappointment and stress (Table II). Teachers reported happiness (joy) and anger most frequently. They said their students feel happy (joyous) when their soccer team wins, when teachers praise them, when they listen to music they like or are told to do what they like to do. Teachers also noticed that their students feel angry when their intention was not understood, their desires were not met, their routine was disrupted, and when they were told to do what they do not like to do.

Teachers understood many of their students found it difficult to express emotion, especially anger, in a contained

way. For example, Ian expressed anger through the expression in his eyes and by stuttering. Patrick did so by biting, hitting and kicking the people around him. Nicholas expressed anger by hitting his head against a wall. His teacher, Felicity, said Nicholas knew he should not self harm, but could not help himself.

TABLE II. TEACHERS' UNDERSTANDING OF THEIR STUDENTS' EMOTIONAL EXPERIENCE

Emotional tone	Teachers knew their students experienced
Pleasant	Happiness (joy), contentment, love or care, enjoyment, laughter, excitement
Unpleasant	Anger, sadness, frustration, fear, irritation, disappointment, stress

Teachers also reported that most students demonstrated care for their classmates. According to Edward's teacher, Frederick, Edward kept an eye on one of his classmates at school excursions and waited for him when he was left behind. Some teachers wondered whether this kind of behaviour comes from a learned routine, students having previously been asked to look after other classmates, or from spontaneous interest. Chris's teacher, Jenny, commented that regardless of the reason, this kind of behaviour shows that students with ASDs are in fact interested in their classmates. She gave the example of Chris, who would urge his classmates to eat and drink what was provided at school lunch, apparently motivated by a sense of their welfare. The recipients of students' care extended to family members and teachers.

C. Question 3: Comparing students' emotional experience and their teachers understanding

This section compares these two accounts of emotion to uncover their similarities and differences as a way to answer the last research question: What are the similarities and differences between the emotions of students with ASDs as subjectively experienced and recognised and their teachers' understanding of these emotions? This comparison reveals that these two sets of emotions generally correspond to each other (Table III). Furthermore, students' particular sensitivity to unpleasant feelings was recognised by one teacher, not all, who commented that her students speak more often of their unpleasant feelings than their pleasant ones. Nevertheless, this comparison demonstrates greater differences than similarities.

TABLE III. SUBJECTIVE EXPERIENCE VS OBJECTIVE UNDERSTANDING

Emotional tone	Students experienced	Teachers knew their students experienced
Pleasant	Excited, fun, glad, good, happy, joy, like, love	Happiness (joy), contentment, love or care, enjoyment, laughter, excitement
Unpleasant	Angry, bad, cranky, cross, distressed, frightened, hard, hate, not good, sick of it, sick, sad, sulky, tired, unpleasant, vexation	Anger, sadness, frustration, fear, irritation, disappointment, stress

The first difference is related to sensitivity to unpleasant feelings. As shown in Table III, students used a more sophisticated vocabulary to describe their unpleasant feelings, but this was not recognised by their teachers. Furthermore, a qualitative difference was found in the variety of the situations or events mentioned by students and teachers that caused both pleasant and unpleasant emotions. The most important difference, however, is between the experience of empathy and the understanding of this experience. While the vast majority of students talked about experiencing empathy, no teachers reported that their students experience empathy. Where do these disparities come from? This question is examined in Discussion and Conclusion.

IV. DISCUSSION AND CONCLUSION

This study investigated the emotional experience of students with ASDs, focusing on the recognition of emotions in self. Students with ASDs expressed a wide range of emotions, but with less verbal facility than might be expected from their peers without ASDs. Also, the range of situations or events that contextualised these emotions was relatively restricted for young adults in their late teens (e.g., home, school, and church, rather than the wider world). But the emotions themselves, and the situations that triggered them, seemed universal.

This study is designed to address current criticisms concerning ways of studying the Theory-of-Mind of people with ASDs; the exclusion of their voices, failure to accommodate their distinctive communication styles, and an imbalance in the expectations for people with and without ASDs in relation to their ability to understand each other's minds. This study adopted alternative modes of communication, not just relying on speech [17], to listen to the voices of people with ASDs, and practised self-determination. Furthermore, the views of teachers were sought to see how they understood the emotions of their students.

As a result, layers of emotions were uncovered. While some emotions were more widely recognised by students (e.g., good and sadness), some were only recognised by a limited number of students (e.g., sulky and vexation). Some of the students' emotions were obvious, and so easily understood by their teachers (e.g., happy and anger), but some were more hidden and so not understood (e.g., empathy). These results confirm the argument of Corker and Shakespeare [14], which is that the global experience of people with disability is too complex to fit within any single theoretical framework. In addition, a clear disparity was found between the range of emotions of students with ASDs as subjectively experienced by themselves and as objectively understood by their teachers – people without ASDs.

This disparity appears to be characterised by a lack of expression. The understanding that teachers develop for their students with ASDs depends upon what their students are seen to express, and how they express it. In other words, teachers know only what their students express. However, students with ASDs have difficulties with communication [16], and therefore with expression. In some cases they did not communicate their emotions unless they were in a situation in which they were specifically asked to do so. Furthermore, the understanding of

teachers may have been influenced by the apparent indifference displayed by their students with ASDs in certain behaviours, such as avoiding eye contact. The absence of overt expressions of empathy, for example, may have given rise to this failure to recognise it within their students.

This disparity between emotions as subjectively experienced and objectively understood highlights the importance of communication, and how communication is a problem for people with ASDs. It also highlights the importance of developing methods that enable the full range of the voices of people with ASDs to be heard in the field of education as well as in research. However, the most important thing is our attitudes towards people with ASDs. As Bovee [15] asked, why have we been concerned about people with ASDs not knowing what is happening in the minds of people without ASDs, but are not concerned about people without ASDs not knowing what is happening in the minds of people with ASDs? What are we missing?

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