

Critical Incidents in Anorexia Nervosa: Patients' Perspective

Jenni Leppanen (✉ jenni.leppanen@kcl.ac.uk)

King's College London <https://orcid.org/0000-0003-2814-4375>

Lara Tosunlar

King's College London

Rachael Blackburn

King's College London

Steven Williams

King's College London

Kate Tchanturia

King's College London

Felicity Sedgewick

University of Bristol

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Abstract

Background

Although social-emotional difficulties are believed play a key role in anorexia nervosa (AN), there is uncertainty regarding what these difficulties might look like. Previous research has largely focused on a “disease model” of social-emotional processing in AN with little attention paid to positive emotions and experiences. Therefore, the aim of the present study was to obtain a fuller picture of critical life events in AN.

Methods

Thirty-four participants aged 16-48 with current or past AN completed an online survey describing self-defined positive and difficult critical events.

Results

Two major themes were identified in the descriptions of positive critical events: Moments of celebration, reflecting external focus, and Unexpected positive outcomes, revealing negative biases. Difficult events were broadly divided into included eating disorder (ED) related and Non-ED life events, involving discussion of relational conflict and feeling unsupported.

Discussion

The findings suggest that AN is largely characterised by negative emotionality and bias. However, people with AN can live rich lives with positive experiences, which reflect reduced self-focused attention and increased “big-picture” thinking. Moreover, people with AN may be open to have their negative expectations challenged through corrective experiences. Together these findings be useful targets for further clinical research.

Plain English Summary

Anorexia nervosa (AN) is a serious life threatening illness and difficulties in emotional processing and social relationships are believed to perpetuate the illness by increasing isolation. However, what these difficulties might look like is uncertain. Furthermore, sole focus on such a “disease model” of AN has been recently challenged as it fails to consider positive emotions and experiences, and thus the full human experience of someone with AN. This online study aimed to address this by asking people with lived experience of AN about critical positive and difficult events. When describing positive critical events some participants discussed moments of celebration which reflected external focus and “big picture” thinking. Other participants discussed unexpected positive outcomes which revealed some negative biases that were met with positive actions. Difficult critical life events largely included discussion of relational conflict and loneliness, which with some participants took place against the backdrop of the eating disorder. These findings suggest that although AN may be largely characterised by negative emotions and loneliness, this is not the full picture. Many participants described living rich lives with both difficult and positive experiences and were open to have their negative expectations challenged with positive actions.

Background

Anorexia nervosa (AN) is a complex eating disorder (ED) characterised by malnutrition and very low bodyweight (American Psychiatric Association, 2013). Theoretical models of AN have suggested that social-emotional difficulties play an important role in perpetuating the illness (Fairburn, Cooper and Shafran, 2003; Wildes, Ringham and Marcus, 2010; Treasure and Schmidt, 2013). Such difficulties are believed to lead to conflict in social relationships, which can in turn lead to increased isolation and create space for the ED to take over the person’s life (Treasure and Schmidt, 2013; Treasure and Cardi, 2017). Although many interventions have been developed targeting various aspects of social-emotional functioning in AN (Cardi, Tchanturia and Treasure, 2018), treatment response remains a significant challenge with only around 33% of patients reaching full recovery (Steinhausen, 2002, 2009; Abbate-Daga *et al.*, 2013; Legenbauer and Meule, 2015). Therefore, further investigation of social-emotional processing in AN can help improve understanding of the illness and aid the development of new interventions.

Over the years there has been a great deal of interest in examining social-emotional difficulties in AN using experimental paradigms. Large scale meta-analytic reviews of these studies report that people with AN have difficulties in several areas of social-emotional processing, including emotion recognition, theory of mind, and emotional expression (Oldershaw *et al.*, 2011, 2015; Caglar-Nazali *et al.*, 2014; Sedgewick *et al.*, 2019). However, more recent work with larger sample sizes and utilising tasks with greater ecological validity have found that people with AN have no general difficulties in explicit recognition of emotions or complex theory of mind tasks (Adenzato, Todisco and Ardito, 2012; Dapelo *et al.*, 2015; Wyssen *et al.*, 2019). It has been suggested that previously reported difficulties in correct attribution of emotional states may be related to negative information processing biases in AN (Dapelo *et al.*, 2015; Ambwani *et al.*, 2016), indicating that there is still a great deal of uncertainty regarding social-emotional difficulties in AN. Furthermore, over the past few years there have been calls to examine positive emotions and experiences in AN, highlighting the importance of studying resilience, hope, and optimism rather than focusing solely on difficulties (Tchanturia *et al.*, 2015). At a time of uncertainty regarding the types of social-emotional difficulties that people with AN might have, it could be valuable to gain further insight by adopting different methods and approaches.

As outlined above, majority of previous work examining social-emotional processing in AN have been behavioural experiments or self-report studies. Such quantitative work lacks the flexibility and ability to capture multiple aspects of behaviour and experiences that people may have. In contrast, a qualitative approach could provide unique insights into a variety of experiences and perspective on social relationships, which can further elucidate what social-emotional difficulties in AN might look like. The few qualitative studies in this area have documented that people with AN report difficulties with emotion expression, blocking or suppressing emotions, and in recognising their own emotions (Kyriacou, Easter and Tchanturia, 2009; Money *et al.*, 2011). Many also reported oversensitivity to, or misinterpretation of, others emotions, fixating on events or over-analysing the behaviour of others (Ison and Kent, 2010; Money *et al.*

al., 2011; Westwood *et al.*, 2016). However, most of these studies have focused on exploring specific aspects of social-emotional processing, such as friendships or experience of emotions (Westwood *et al.*, 2016), or investigated patients' views in the context of an intervention study (Money *et al.*, 2011). A more implicit approach, examining the emotional experiences of those with lived experience of AN when discussing important life events, may help to further illuminate social-emotional processing in AN and help identify new avenues for task development.

The aim of the present study was to explore important *positive* and *difficult* life events, whilst acutely unwell, among people with lived experience of AN. We were specifically interested in events involving other people, as this would allow us to gain insight into social relationships during the acute stage of illness. Using the Critical Incident Technique (CIT; (Flanagan, 1954)), we sought to answer the following research questions:

- 1) What are the important events participants choose to describe?
- 2) What are the emotional themes associated with those important events?
- 3) What are the social relationships involved and how are they portrayed?

This study was exploratory in nature and therefore we did not seek to test *a priori* hypotheses. However, based on previous research outlined above, we did have some expectations. As the ED is central in the life of a person with AN, we expected that many of the events would be centred around AN, involving discussions of diagnosis and treatment.

Methods

1.1 Participants

Thirty-four participants completed the study. All participants were 16 years old or older with current or history of AN. The mean age of the sample was 26.43 (SD = 8.48) and on average participants reported having been 16.97 (SD = 5.50) years old when they were diagnosed with AN. Twenty-eight participants were female, four participants were male, and one person was non-binary. Most participants reported being single (N = 29), two people reported living with a partner, one person was married, one was in a civil partnership, and one was separated. Thirty-two participants were of white ethnicity, one participant was of mixed ethnicity, and one participant reported being of other, non-specified ethnicity.

Diagnosis was confirmed by asking participants if they had a diagnosis of AN and who diagnosed them (psychiatrist, psychologist, general practitioner, other). All participants reported having been diagnosed with AN, ten of whom considered themselves to be recovered (REC). Twenty participants reported having been diagnosed by a psychiatrist, 12 by their general practitioner, one by a clinical nurse specialist, and one by a clinical psychologist. On average, participants reported BMI below 18.5 (M = 18.31, SD = 3.13), but those who considered themselves recovered reported numerically higher BMI (M = 20.58, SD = 1.05) than those with current AN (M = 17.58, SD = 3.17). Additionally, on average participants reported ED symptomatology, as measured by the Eating Disorder Examination Questionnaire, that was more than double of that reported by healthy individuals in the community (M = 3.25, SD = 1.72, (Fairburn and Beglin, 1994)). Participants who reported being recovered reported numerically lower levels ED symptomatology (M = 1.48, SD = 0.94) than those with current AN (M = 3.93, SD = 1.34). Twenty-three participants also reported having other diagnoses in addition to AN, most common of which were depression (N = 10, 43.48%), anxiety (N = 8, 34.78%) and obsessive compulsive disorder (N = 7, 30.43%). For further details please see Supplementary Table 1.

Participants were recruited through online adverts on social media (Twitter, Facebook) and from ED charity (BEAT) website. As the study took place online, all participants were required to complete an online consent form prior to completing the study. The study was approved by the King's College London Psychiatry, Nursing and Midwifery Research Ethics Subcommittee, United Kingdom (HR-19/20-13004). All procedures were conducted in accordance with the latest version of the Declaration of Helsinki (2013).

1.2 Critical incident technique

Participants were asked recount critical positive and difficult critical situations or events they have experienced while acutely ill using the CIT (Flanagan, 1954). The CIT is an effective qualitative research technique used to systematically collect observations of significant events of which the person has first-hand experience. CIT has been used in numerous fields, including psychology, medicine, business, employee performance appraisal, and marketing (Butterfield *et al.*, 2005; Chou *et al.*, 2016; Durand, 2016; Hwang and Seo, 2016; Santha *et al.*, 2016; Fridlund, Henricson and Mårtensson, 2017). Therefore, we used the CIT in the present study to enable us to reach our aims and answer our research questions.

The CIT is typically used as a semi-structured interview, but here it was adapted to questionnaire format (Supplementary materials) to make the study more accessible and enable wider recruitment of participants. Participants were first asked to identify the event they wished to discuss and describe what was particularly positive or difficult about it. They were then asked for further details about the event, including what happened before and during the event, what the consequences of their actions were, what the other people present during the event were doing, and what the consequences of those people's actions were.

1.3 Qualitative data analysis

Participants' responses to the CIT were subject to thematic analysis (Braun and Clarke, 2006). The thematic analysis was conducted by two authors, JL and FS. Thematic analysis approach was chosen because it is primarily used to identify reoccurring similarities and differences in the narratives. In other words, this approach allowed data from multiple participants to be examined simultaneously, which in turn enable us to meet the main aim of the present study. Additionally, thematic analysis offers a flexible approach to data that enabled us to examine key positive and difficult social incidents in the lives of people

with AN as well as explore other concepts such as different types of social-emotional difficulties including information processing biases, and emotion processing and regulation styles.

Thematic analysis has been proposed to involve inductive analysis whereby themes are identified from the data without prior expectations or theoretically driven analysis where the researcher's prior knowledge of the phenomenon studied shapes the process (Braun and Clarke, 2006, 2013). In the present study we used a combination of these two approaches. Informed by previous work, we took a theoretical approach to examine participants' experiences of positive and difficult events. CIT questions were used to probe participants to provide further detail about the event in question, who the other people involved were, how the participants interacted with them, and finally whether they were satisfied with the outcome. Participants' narrative responses to question about positive and difficult events, were then analysed separately to identify commonly occurring themes and subthemes within each event category. We paid particular attention towards what the social interaction participants chose to discuss, how the participants described their own and others' behaviour, what emotions were discussed or emerged from the narratives, and how satisfied the participants were with the outcome. Within each event category themes were identified without reference to previous work, thus representing inductive themes.

Before starting thematic analysis, all CIT responses were divided according to event category, descriptions of positive and difficult events were examined independently. We adopted a six-step approach to thematic analysis. We began with (1) data familiarisation, a stage during which the narrative responses were read thoroughly. After this (2) initial codes were generated to identify content features, which represented commonalities and differences between the narratives. The feature codes were then grouped and (3) broader themes were identified. Following standard practice, during this stage, certain content feature codes were discarded if they were identified in fewer than 3 participants' narratives or if they did not fit in any of the other broader themes already generated. Next the themes generated by grouping the feature codes were (4) reviewed to ensure clear relationships themes and subthemes and avoid duplication. After review, (5) themes and subthemes were defined according to the concepts they represented and the (6) final report was produced. The codes and themes were agreed upon independently by the two authors. Any disagreement or uncertainty regarding the codes and themes were brought to the whole team for further discussion.

Results

1.1 Positive critical events

When participants were asked to reflect on positive critical events, some discussed events that were positive throughout and left them feeling good about themselves. However, most participants chose to discuss events that had at least some negative components, either reflecting on their own negatively biased expectations or focusing on negative events in a perceived absence of positive experiences. Thus, three major themes reflecting the emotional valences of the narrative responses were identified in participants' narrative responses to the CIT questions about positive critical events: (1) Unexpected positive outcomes, (2) Moments of celebration, (3) Nothing positive to report (Figure 1). Each theme and their corresponding subthemes are presented in Figure 1 and discussed further below.

Figure 1. Positive critical events

1.1.1 Unexpected positive outcomes

The *Unexpected positive outcomes* theme was identified in several narrative descriptions of events where the participants described feeling low and alluded to having negative expectations of themselves, the event itself, or the other people involved. Instead of having these expectations met, the participants talked about how they were pleasantly surprised by the actions of others: *"My sister found my food that I was hiding behind my bed. It was positive because [she] wasn't rude and horrible about it"* (AN-05). This theme suggests that many participants identified as having negative information processing biases, assuming they were worthless and unloved, or the people around them did not care or understand them. When these expectations were met with positive actions from others, the participants talked about how such experiences made them feel wanted, supported, and gave them motivation to work on their recovery. Although these events all involved challenging participants expectations and assumptions, it was clear from the descriptions of the positive outcomes that these were critical positive experiences.

The *Unexpected positive outcomes* theme comprised of two subthemes: (a) *positive reminders* and (b) *understanding and acceptance*. Several participants discussed receiving *positive reminders* from their loved ones during times when they were feeling low or going through hard times. In all these narratives, participants briefly alluded to their low self-esteem and low mood, which they assumed their loved ones knew about. This knowledge was discussed as the catalyst that led their loved ones to show the participants through actions that they were indeed loved and worthy. *"My chest infection had been worsening in the few days preceding this incident, and in turn my mood had dropped quite a bit, so my self-esteem had been particularly low... Two of the day staff volunteered to take me [to the Emergency department]... them going above and beyond made me feel cared for and worthy"* (AN-07). A few participants also mentioned that although the positive reminders made them feel loved and gave them motivation to work hard on their recovery, they also triggered feelings of guilt: *"I was in hospital on Christmas day and my father visited. He brought with him a big jar of notes that my friends had written as well as small gifts from them, all [the] memories from the past and things they liked about me... I felt very emotional, but also guilty"* (REC-05). This further indicates that people with AN may battle with deep sense of worthlessness and, therefore, positive exchanges can give rise to complex emotions, which in turn can make it difficult to cope with or accept positive interactions.

Another subtheme was *understanding and acceptance*, which included discussion of significant stages of illness. These included having other people find out about ED related behaviours and needing hospital treatment. Hiding the illness is common in AN, often fuelled by feelings of embarrassment, shame, or desire to protect the illness, which can be seen as something valuable and positive. This in turn often leads to avoidance and further social isolation, creating barriers

to help-seeking. Although all participants talked about how other people finding out about the ED was a daunting prospect, they also discussed their desire for support and acceptance: “[I] wanted no one to find out. But it was good that they found out...I felt supported and less alone with what I was doing” (AN-05). Being met with compassion and understanding also served as an opportunity for more open discussion and learning, which in the context of treatment helped in the recovery process: “our sessions individually had initially focused on her [therapist] gaining an understanding of my personality and thought patterns...[It] planted the seed around navigating through negative emotions...the skills I developed during this time enabled me to communicate this better to the people around me” (REC-02). It was clear in the narratives that understanding and acceptance from loved ones and professionals was instrumental in the participants being able to ask for help without judgement, and to direct compassion towards themselves and allow themselves to engage with treatment.

1.1.2 Moments of celebration

The theme *Moments of celebrations* included discussion of being part of a fun event, such as a wedding or a birthday celebration, and achieving goals, such as getting accepted to university. Participants described the events using language that indicated that they felt the events were positive throughout the narrative. Interestingly, this theme was generally characterised by external focus of attention, with participants primarily talking about and describing the event and the other people involved. This could reflect an attempt to reduce self-focused attention to lower social anxiety. Indeed, a few participants discussed how focusing on activities and their loved ones enabled them to “get out of [their] own head” (REC-01) and enjoy the moment. This theme comprised of three subthemes, (a) *Being a part of an event* and (b) *Working hard and succeeding*, which are discussed further below.

The first subtheme, *Being part of an event*, included discussion of both significant occasions such as a wedding or birth of a relative, as well as smaller get-togethers, including birthday celebrations and days out. All narratives within this subtheme were characterised by a focus on being actively involved and participants discussed how being part of the event and focusing on the activities made them feel connected to their loved ones: “By saying ‘yes’ to one thing, and seeing I was still okay after it, I was more likely to say ‘yes’ to the next. As I engaged in more things, I enjoyed myself more as had more confidence that the consequences would be okay.” (REC-07). It was also clear that sense of belonging and shared experiences made participants feel like they were able to function competently as part of their community, which for some participants served as motivation to work hard on recovery from AN: “His birth gave me the determination to work hard on my recovery so that I could watch him grow into a bright young boy and spend valuable time with him” (AN-08).

Another subtheme was *working hard and succeeding* which was characterised by participants discussing how they worked hard to reach their goals. Although participants mentioned how receiving support and encouragement from their loved ones during this time was important in keeping them focused and calm, the primary focus was on their own work: “I worked hard to get where I wanted to go [University of choice]...[my family offered] Lots of support and encouragement which helped” (AN-14). This sense of accomplishment made participants feel proud and competent: “Having been so unwell that I had previously been unable to undertake barely any physical activity...[I] felt a huge sense of achievement in being able to take my young daughter onto the ice rink” (AN-09). It was clear that the feeling of achievement allowed participants to view themselves in a more positive light, which in turn made them feel more motivated and feel closer to their loved ones.

1.1.3 Nothing positive to report

Unexpectedly, a few participants recounted negative experiences with no clear positive themes as their positive critical events. These included accidental death of a loved one and being victimised. One participant also talked about missing out on an important, positive family event: “My brother asked his girlfriend to marry him...I missed him asking her...I felt like a failure and a let down to the family” (AN-09). A tendency to associate the self with negative events is common in AN (Oldershaw, Startup and Lavender, 2019), and these narratives could be a reflection of an extreme case of negative bias whereby these participants felt that they had nothing positive to discuss or that nothing positive had happened to them.

1.2 Difficult critical events

Most participants discussed situations that were in some way related to their ED when asked to recount difficult critical events in their lives. It became clear that for these participants the AN was often at the centre of important negative experiences, which is to be expected as the illness and associated symptoms often serve as both the cause and consequence of shame and distress. Interestingly, other participants discussed difficult events that were not necessarily directly tied to AN, but were to do with other distressing life events that happened to occur when the participant was ill. Thus, the following themes were identified in the narratives: (1) ED-related difficult events and (2) non-ED difficult events. The themes and their corresponding subthemes are presented in Figure 2 and discussed further below.

Figure 2. Difficult critical events

1.2.1 ED-related difficult events

The *ED-related difficult events* theme was identified in narratives where participants discussed interactions with their loved ones or ED services that revolved around the illness and which resulted in conflict and personal distress. Participants primarily discussed how other people’s reactions to the illness or associated behaviours made them feel pressured or ashamed. This theme suggests that people with AN have many complex emotions tied to their illness, which can be difficult to navigate during stressful events. Indeed, as participants discussed how these difficult interactions left them feeling alone, unsupported, and as though they should or could not openly discuss their emotions, it was clear these social events formed a significant step in their illness

journey. The *ED-related difficult events* theme comprised of three subthemes: (a) *ED as a cause*, (b) *Facing ED*, and (c) *ED services*, all of which are discussed in more detail below.

The first subtheme, *ED as a cause*, included participants discussing how AN was causing them personal distress and leading to relational conflict. Participants talked about how their illness made them feel like the odd one out in social occasions, leaving them feeling overwhelmed and sometimes unable to cope. Social eating in particular made participants feel pressured to challenge their ED thinking style and behaviours, which generally resulted in one of two negative outcomes. Some participants felt overwhelmed and upset, *"Went out for dinner and ended up crying because I ate"* (AN-01), which left them feeling guilty and ashamed despite the fact that they wanted to enjoy the event: *"I upset my family and ruined the evening. Also embarrassed myself... I didn't want to react that way but at the time it helped me cope."* (REC-01). Other participants found that being under pressure made them feel unheard and misunderstood when they tried to explain or express their feelings and thoughts, which in turn led to anger and arguments: *"My mum and I started to discuss the meal plan in the car but the conversation kept going round in circles... I became increasingly more irritated and distressed as the discussion went on, and eventually reached my breaking point"* (REC-07). Frequently, participants who wrote about ED as a cause of relational conflict also discussed how these difficult interactions solidified their feelings that their loved ones were not there to support them, making them feel like they could not reach out and ask for help when they needed it: *"I felt belittled, like she [a friend] didn't really care. I felt scared that others felt the same as her, and that I shouldn't talk to others about how I felt because they would start resenting me"* (AN-19).

Facing the ED was another clear subtheme, including discussions of situations where participants were suddenly made aware of the extent of their illness and how it impacted other people around them. Denial of the illness or its impact on the person's health is common in AN. This thinking style can be thought of as a coping mechanism, which can help the person feel strong and in control. Thus, unsurprisingly some participants seemed shocked to receive diagnosis of AN when they were going to see their doctor for other reasons: *"I was diagnosed with anorexia nervosa and was about to be hospitalized... I did not believe this was happening. I did not think there is anything wrong with me. I have heard about anorexia, but I did not think I am the one having it."* (REC-10). Participants also alluded to often being unaware of the impact AN had on their loved ones, which made having to suddenly face the reality of the illness an even more difficult experience: *"I passed out at the GP and it made my mum very upset... I had not eaten anything before going to the appointment."* (REC-03). In the end, despite the difficulties, a few participants also talked about positive outcomes and relief associated with having to face their illness: *"I was almost relieved to be diagnosed, it felt like I could finally speak to somebody about it."* (AN-10).

The third subtheme was *ED services*, which included discussion of participants' experiences and interactions with their ED care teams. All narratives under this subtheme related to a particularly turbulent time in the participants' life during which the AN was in charge and participants engaged in behaviours and thinking styles that could be interpreted as protecting the illness. Indeed, several participants talked about ED services in a manner that suggested a *me-versus-them* mentality, making it hard for participants to engage with treatment: *"As my mum and I exited the ward that Friday night, my care-coordinator handed a meal plan for that weekend to my mum. It wasn't the one we had discussed... My anorexia was talking for half of the conversation, trying to get my mum to change the meal plan... I felt extremely betrayed both by my care-coordinator (who I got on with and thought I could trust) and my mum (who I felt was taking the hospital's side and not her own daughter's)"* (REC-07). Some participants also talked about how during this time they felt let down by the ED services even though they felt this was a time when they needed support the most: *"I'd been struggling with my eating disorder recovery and not making any progress... Due to my lack of progress and motivation the eating disorder team decided to take a treatment break... I was very overwhelmed and tried to end my life by jumping off a bridge."* (AN-07). In all these narratives, the participant conveyed a feeling that things could have turned out better if they had been heard or allowed to be part of their own treatment instead of being dismissed and let down.

1.2.2 Non-ED difficult events

The narratives that formed the *Non-ED difficult events* theme involved negative life experiences that were not directly related to the ED, but rather happened to occur while the participants were ill. This theme comprised of two subthemes: (a) *Death and illness*, and (b) *Relational conflict*.

Under the *Death and illness* subtheme, participants discussed grieving the loss of a loved one or dealing with a family member's illness. When discussing losing a loved one, participants described going through common stages of grief, but appeared to react in one of two ways: they felt upset and overwhelmed to the point that they did not want, or know how, to reach out for help: *"I was on the way to a party on the bus and got a message from a friend that our friend had died. I continued to the party and didn't mention it to anyone there... I felt very dissociated and didn't know what to do. I got quite upset and no one knew why."* (REC-05). Some participants, on the other hand, talked about how the loss made them feel exasperated: *"The death of my godmother/aunt. I was feeling very angry as she was sick and I wanted to swap places with her"* (AN-16). A few participants talked about how their need to stick to their routine at the time of the incident made them feel guilty and ashamed later: *"My mum had a seizure... I was upset and frustrated as I stressed about how I'd get to work and who would make my lunch. I should've been more upset and caring and stayed at home"* (AN-04).

The other subtheme identified in the narratives was *Relational conflict*. This subtheme included discussions of difficult interactions with loved ones which left participants feeling alone and upset, when what they desired was support and encouragement from their loved ones: *"I was in hospital after having a blackout and badly injuring my face, and I texted [my friend] to let her know, but received an abusive reply... She told me our friendship was over"* (AN-18). Interestingly, similar to the relational conflict caused by the ED, narratives under this subtheme also included discussions of how these difficult interactions left participants feeling dismissed, which was often interpreted as an indicator that nobody cared and there would be no point in reaching out to others in the future: *"My mum disregarding my feelings made me feel invalidated and added to my belief that I shouldn't open up to people."* (AN-22). Taken together, this could be one of the factors influencing the development or maintenance of negative cognitive biases in AN.

Discussion

The present study aimed to explore positive and difficult events in the lives of people with lived experience of AN. Participants completed a CIT-style questionnaire asking them questions about these critical events and the resulting narratives were subject to thematic analysis. Themes identified in the narratives met some a priori expectations, namely that many of both the positive and difficult incidents were presented against the backdrop of the eating disorder, which formed a large part of the participants' lives when they were acutely unwell. Interestingly, several participants also revealed their negative expectations when asked to discuss positive life events.

Over the past few years there have been calls to study positive emotions in AN (Tchanturia *et al.*, 2015), however, to our knowledge no studies have thus far explored patients' narratives of positive experiences. In the present study, the critical events that were entirely positive under the theme *Moments of celebration* frequently involved discussion of achievements, having something to look forward to, and active engagement in activities. Such focus on other people and future events could reflect reduced self-focused attention. Self-focused attention, sometime referred to as rumination or dwelling on one's own emotions and internal experiences, has been extensively studied in the field of social anxiety and has been associated with negative interpretation bias and tendency to exaggerate others' negative feelings towards oneself (Mor and Winquist, 2002; Bögels and Mansell, 2004; Anderson *et al.*, 2008). Reducing self-focused attention, particularly to negative aspects of self, has been found beneficial in reducing social anxiety and fear of negative evaluation (Bögels and Mansell, 2004; Hedman *et al.*, 2013; Donald, Abbott and Smith, 2014; Junghans-Rutelonis *et al.*, 2015). This finding suggests that people with AN can shift their focus of attention and have rich, enjoyable experiences, demonstrating optimism and hope even in the acute stage of illness.

Fully engaging in activities and focusing on other people can also be seen as increased "big picture" oriented thinking. Experimental research within the general population has documented that increased "big picture" thinking is associated with a tendency to react in a positive manner and increases positive affect (Fredrickson and Joiner, 2002; Gu *et al.*, 2017). Interventions targeting excessive detail focus in AN, such as cognitive remediation therapy, have been found to improve mood and increase "big picture" thinking in experimental tasks (Dahlgren *et al.*, 2014; Lang, Treasure and Tchanturia, 2015; Giombini *et al.*, 2017). Furthermore, qualitative research has found that the ability to see the "big picture" may be a key component in supporting recovery from AN (Weaver, Wuest and Ciliska, 2005; Cardi, Cunha and Treasure, 2013). When discussing their recovery journey, people with lived experience of AN have reported that focusing more on their loved ones enabled them to start to questioning the illness and recognise its full impact on their own and others' lives (Weaver, Wuest and Ciliska, 2005). This was identified as a turning point in the illness journey at which the person felt able to start distancing themselves from the illness and develop an identity independent of AN. Taken together these findings suggest that further investigating and building on the strengths and resilience people with AN have may be a useful target for further interventions. Sole focus on a "disease model" of emotional processing in AN often fails to examine the full human experience of someone with AN (Tchanturia *et al.*, 2015).

In the present study, several participants seemed to demonstrate negative biases when asked to discuss important positive events. This finding is in line with previous experimental work finding that people with AN show increased attention towards negative stimuli and a tendency to interpret ambiguous scenes in a negative way (Cardi *et al.*, 2015, 2017; Ambwani *et al.*, 2016; Turton *et al.*, 2018). Interestingly, participants found these experiences to be positive because their own negative expectations were met with positive actions from the people around them, particularly when they were met with support, validation, and understanding that they may have felt unable to ask for. These events could be interpreted as so called corrective experiences, in which a person challenges their own fears or expectations resulting in a new way of viewing others and the self (Goldfried, 2012). Corrective experiences have been reported to provide people with new understanding of previous important experiences through reflection (Wiraszka-Lewandowska, Sym and Kokoszka, 2005; Friedlander *et al.*, 2012; Friedlander, Lee and Bernardi, 2013). This in turn leads to improved self-esteem, reduced reliance on defence mechanisms, and greater social support achieved through disclosure and sharing of emotional experiences (Friedlander *et al.*, 2012; Friedlander, Lee and Bernardi, 2013). Although corrective experiences have not been extensive research in the field of ED, one study examining the usefulness of psychodrama reported that by creating corrective experiences the group allowed the participants with ED to re-evaluate their previous emotional, personal, and cognitive experiences (Prosen, 2016).

In previous qualitative work people with AN highlighted the importance of allowing themselves to accept social support and open up to others when recounting their experiences of recovery (Weaver, Wuest and Ciliska, 2005; Federici and Kaplan, 2008; Jenkins and Ogden, 2012). Participants engaged in careful expectation management, first gauging others reactions before opening up, which in the end gave them the affiliate support they were seeking and aiding their recovery (Weaver, Wuest and Ciliska, 2005; Federici and Kaplan, 2008). Taken together with the present findings, this suggests that people with AN are open to corrective experiences, which highlights need for further research into how these experiences may be facilitated in a therapeutic context in the field of ED. Importantly in the present study, a few participants also discussed how the positive actions and gifts from others made them feel loved, but also triggered feelings of guilt. This could be interpreted as evidence of an internalised, deep sense of worthlessness and shame, which makes believing and accepting positive words and actions towards oneself difficult. Indeed, previous work has found that people with AN frequently report feeling worthless, which can interfere with social relationships and recovery (Offord, Turner and Cooper, 2006; Federici and Kaplan, 2008; Tierney and Fox, 2011; Watson *et al.*, 2012). Taken together, these findings suggest that negative cognitive biases can be challenged with corrective experiences in AN, but the actions and reactions of others, and navigating through feelings of worthlessness are key in order to not further alienate the person.

Difficult critical events could be broadly divided into ED-related and non-ED events. When participants were discussing ED-related difficult events they talked about personal distress, difficulties with ED services, and having to face their illness. Participants mostly talked about how these events made them feel pressured, misunderstood, and alone, with some participants talking about how they wanted to escape the situation as they felt unable to cope.

Previous studies with people with history of AN have reported that feeling alone with the illness and unheard or misunderstood made participants feel less safe and more reluctant to accept changes (Federici and Kaplan, 2008; Linville *et al.*, 2012; Fogarty and Ramjan, 2016; McNamara and Parsons, 2016). This led to increased distrust between the patient and their loved ones, enforcing feelings of loneliness, and negatively impacted therapeutic alliance (Linville *et al.*, 2012; Fogarty and Ramjan, 2016). As a result, participants reported that they often fell intentionally silent and did not want to reach out. However, such reduced expressiveness and responsiveness has been found to be associated with reduction in social support offered by others and disrupted communication

(Gross, 2002; Butler *et al.*, 2003; Butler, Lee and Gross, 2007). All of this combined may create a vicious cycle of reduced social support, serving to maintain the illness.

Interestingly, a few participants who discussed facing their ED as a critical difficult experience also found that in the end these were key events in their recovery. This could be taken as "*hitting rock bottom*" and suggests that having to finally face the impact the illness had on them and their loved ones was an important source of motivation for these participants. This could be taken as a shift in thinking, moving from denial to acknowledging the illness. Indeed, previous studies have reported that people recovered from AN found having to face the personal, health, and social consequences of the illness was a turning point in their illness journey (Weaver, Wuest and Ciliska, 2005; Jenkins and Ogden, 2012). It enabled them to see the "*bigger picture*" and how their actions impacted other around the, which in turn gave them motivation to work on the their recovery (Weaver, Wuest and Ciliska, 2005). These findings suggest that by reflecting on difficult life events some people were able to turn them into a positive. This further highlights the importance of examining not only negative but also positive emotions in AN as these may be an interesting target for interventions and a tool to prevent relapse.

When discussing both ED-related and non-ED difficult life events several participants talked about relational conflicts as particularly important interactions. Participants talked about how others' negative reactions to their attempts to seek support or ED-related coping strategies made them feel alone and rejected. Many participants also mentioned how these interactions served to further enforce their pre-existing notion that other people did not truly care about them and that they were alone with their illness. Such interpretations of these negative experiences could be one of the factors influencing the development and maintenance of negative cognitive biases in AN, similar to those alluded to in the *Unexpected positive outcomes* theme. This could be interpreted as a formation of a maladaptive coping strategy founded in expectation management. Tendency to exaggerate others' negative feelings towards oneself has been associated with increased negative self-focused attention and rejection sensitivity (Ayduk *et al.*, 2000; Mor and Winquist, 2002; Bögels and Mansell, 2004; Anderson *et al.*, 2008). Previous experimental studies have reported that people with AN report elevated rejection sensitivity and perceived lower social rank (Cardi *et al.*, 2013; Via *et al.*, 2015; De Paoli *et al.*, 2017). When expecting to be rejected by others, people who experience high rejection sensitivity may engage in passive, hostile behaviours including avoidance and withdrawal of love and support (Ayduk *et al.*, 2000, 2003). However, instead of preserving pride and bringing about positive feelings, such strategies tend to become self-fulfilling strategies, often leading to more social difficulties including rejection (Ayduk *et al.*, 2000, 2003). Thus, further investigation of potential maladaptive coping strategies that fuel negative cognitive biases in AN may be of interest.

1.1 Limitations

The main limitation of the present study was that it was conducted online, meaning that it was not possible to conduct a full assessment to confirm diagnosis or stage of illness. Additionally, the sample was almost entirely white, British, and female, which limits the conclusions that can be drawn. Future studies may benefit from targeting specifically gender- and ethnic minorities as their experiences of AN and related difficulties may be different.

The CIT was adapted into questionnaire format, which allowed us to recruit participants from more widely across the country without placing an additional burden on participants. However, this format limited the responsiveness inherent to an interview setting. For instance, had the study been conducted face-to-face, it would have been possible to ask why participants described negative experiences when asked for positive events.

Conclusion

The present study aimed to investigate positive and difficult critical incidents in AN. Although, several participants talked about positive events that involved *Moments of celebration*, with focus on reduced self-focused attention and increased "*big-picture*" thinking, the majority of the positive critical events also involved some negative experiences that then ended on a positive note. When discussing *Unexpected positive outcomes* participants revealed some evidence of negative biases which were challenged through positive actions of others around them. Difficult critical events broadly involved discussion of *ED-related* and *Non-ED life events*. When discussing *ED-related life events* participants talked about how the illness made them feel like they couldn't join in and how others around them made them feel under pressure, asking for too much too soon. Interestingly, relational conflict appeared in both ED-related and Non-ED related life events and discussion of how these conflicts solidified participants pre-existing expectations that other did not truly care about them and convinced them. These findings further support the notion that people with AN often have negative information processing biases. In the present work, these biases appeared to be reaffirmed by difficult interactions with others, whether directly linked to the illness or not, which left them feeling alone and unsupported. Importantly, it seems that these negative beliefs could be challenged through corrective experiences, suggesting that it is possible to modify negative biases in AN.

Abbreviations

AN = anorexia nervosa

ED = eating disorder

REC = recovered

CIT = Critical incident technique

BMI = body mass index

N = number

M = mean

SD = standard deviation

Declarations

Ethics approval and consent to participate

The study was approved by the King's College London Psychiatry, Nursing and Midwifery Research Ethics Subcommittee, United Kingdom (HR-19/20-13004). All participants were required to complete an online consent form prior to completing the study.

Consent for publication

Not applicable.

Availability of supporting data

The CIT questionnaire used in the study is included in this published article (Supplementary materials). The datasets generated during and/or analysed during the current study are not publicly available due to the data containing information that could compromise research participants' privacy/consent, but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

JL, LT, RB, and FS contributed to the conception of the study and designed the online questionnaire. JL, LT, and RB also contributed to the recruited participants and data collection. JL and FS contributed to the data analysis and interpretation of findings with final approval from LT, RB, KT, and SW. All authors contributed to drafting the final paper. All authors read and approved the final manuscript.

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Figures

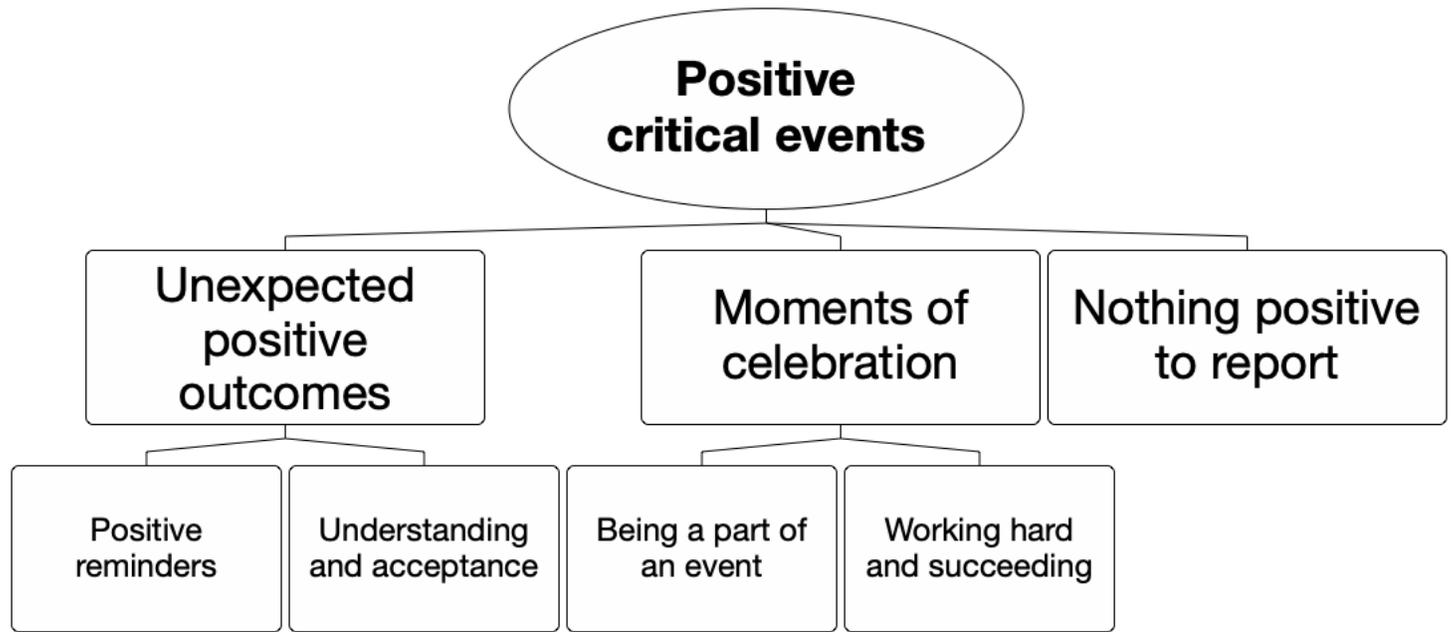


Figure 1

Positive critical events The map shows themes that were identified in participants' narrative descriptions of positive important events.

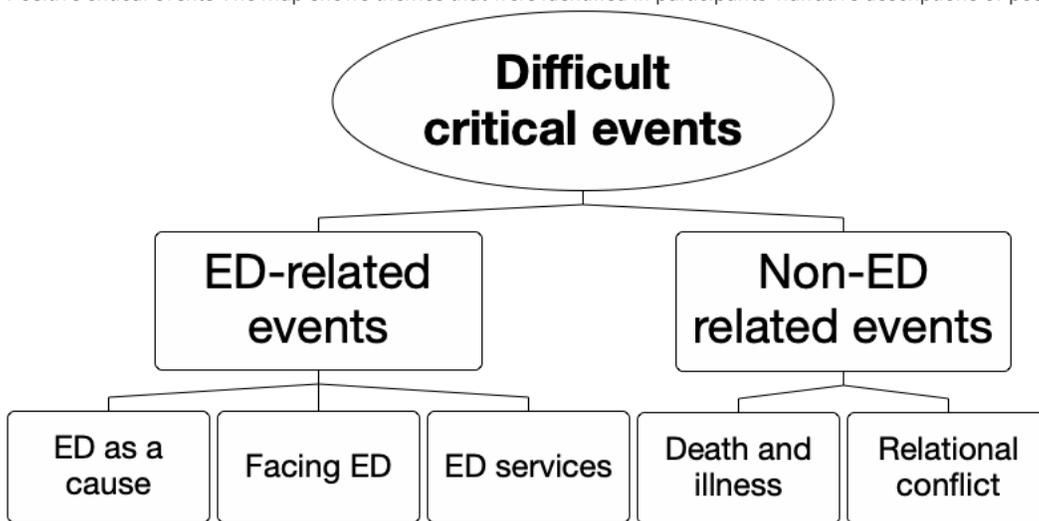


Figure 2

Difficult critical events The map shows themes that were identified in participants' narrative descriptions of difficult important events. ED = eating disorder.

Supplementary Files

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