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RESEARCH ARTICLE



"I've learned to sift it": a qualitative exploration of participant experiences of the SIFT IT social cognition group treatment program for people with acquired brain injury

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ABSTRACT

Purpose: Few evidence-based treatment options are available for people living with acquired brain injury (ABI) experiencing social cognitive processing difficulties. The SIFT IT group treatment program is a novel intervention developed to comprehensively target social cognitive skills in this population. This paper explored the experiences of participants who completed the SIFT IT program within a broader feasibility randomised controlled trial.

Materials and methods: Fifteen people with ABI were recruited and participated in the SIFT IT program. The SIFT IT program consisted of 14 weekly 90-minute small group sessions facilitated by a clinical psychologist with five modules targeting social cognition processes. Semi-structured interviews were conducted with 14 participants post-treatment. Interviews were analysed using thematic analysis.

Results: The five main themes identified in the analysis were: (1) social cognitive processing changes; (2) impacts of change; (3) valuable program components; (4) biopsychosocial influences; and (5) moving forward.

Conclusions: Targeting social cognitive skills in a group treatment format for people living with ABI was largely seen as acceptable and of benefit to these individuals. This reinforces the clinical need for rehabilitation providers to identify, and treat, those with social cognitive difficulties.

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Social cognition; perspective taking; treatment; rehabilitation; acquired brain injury; qualitative

> IMPLICATIONS FOR REHABILITATION

- People living with moderate to severe acquired brain injury and experiencing challenges with their social cognitive processing perceived a benefit from participating in a group social cognition treatment program.
- Those who received the intervention perceived they developed greater awareness of their social cognitive processes, greater perspective taking flexibility, and this helped them respond differently in social situations.
- Treating social cognition in a group format was considered key by participants to support their awareness of, and ability to address, their social cognitive difficulties.
- Participants reported wanting social cognition interventions to be integrated within clinical services, highlighting the clinical need and demand for rehabilitation services to target these skills.

Introduction

The impact of acquired brain injury (ABI) on social cognitive processes is well known [1,2], from a reduced ability to perceive social cues and mentalise [3–6], to an increased risk of misattributing, or misinterpreting, social information [7,8]. Further, challenges with social cognitive processing have been associated with poorer socioemotional outcomes and reduced quality of life [9–11]. The social behavioural consequences of brain injury (e.g. insensitivity, egocentricity, emotional dysregulation) have historically been viewed as pervasive and difficult to treat [12]. Such consequences have significant social sequelae for

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individuals' with ABI, often resulting in relational difficulties, fewer social contacts, increased social isolation, and considerable carer burden on close others [13–15]. Few clinicians in practice have reported targeting social cognitive skills specifically when working with such clients [16,17]. This recognition has led to burgeoning research efforts to support rehabilitation, and amelioration, of social cognitive deficits in this population (e.g. [18–24]).

The SIFT IT social cognition group treatment program was developed for individuals living with ABI to comprehensively target the interrelating, multi-faceted, components of social cognition [1,20]. Quantitative outcomes from a feasibility randomised controlled trial (RCT) were recently published by Cassel et al. [25]. This study was the first RCT of a social cognition treatment group, with promising feasibility findings that detailed the demand for such a social cognitive intervention, implementation of the treatment program as intended, evidence of participant acceptability for the program, and preliminary efficacy findings of large between-group treatment effects (with non-zero 95% confidence intervals) for a range of social cognitive outcome measures. Whilst these were important outcomes to document, further valuable information can be gained from exploring the participant experience of the intervention [26,27]. Mixed method approaches have been recommended in the development, and testing, of complex interventions [28–30]. Providing a voice to the lived experience of participants, further, has been suggested to improve a treatment program's ecological validity and support more nuanced understandings of both treatment acceptability and perceptions of treatment efficacy [31,32].

Despite this, few social cognitive interventions have reported qualitative outcomes to date. Lavi-Rotenberg et al. [33] used a mixed methods approach to better understand the experiences of participants with a serious mental illness after completion of one of two social cognitive treatments trialled in an RCT: social cognition and interaction training (SCIT) or therapeutic alliance focused therapy. Participants' treatment satisfaction, the domains in which they perceived change, and the perceived contributory factors to change were compared between the two interventions: both demonstrated overall benefit for participants but with different purported underlying mechanisms to this change. Other qualitative approaches in this field have focused on more specific feasibility questions, such as the acceptability of a novel virtual reality approach to SCIT treatment delivery to ensure participants' perception of safety during the intervention [34].

Whilst there are yet to be any mixed methods approaches to examine social cognitive interventions for people with brain injury, they have increasingly been recognised as important in the evaluation of other complex behavioural interventions in this population (e.g. [31,35–42]). Gathering feasibility and efficacy data directly from participants themselves has supported researchers to understand which elements of a treatment were important to participants [31,36], the benefits experienced by participants as a result of the intervention [31,37,42], the intervention components perceived as most meaningful [35–37,39], and how this has impacted their lives [31,38,42]. Such studies have additionally been able to identify challenges experienced and elements for improvement within the treatment program to further strengthen the program's acceptability and support its future translation into clinical practice [35,40–42].

The purpose of the qualitative study within the SIFT IT feasibility RCT was, therefore, to build a deeper knowledge of participants' experiences of their study participation from their perspective: (1) how they experienced the SIFT IT program and what factors influenced their perceptions of acceptability; (2) what changes they perceived (if any, and in what way) from taking part in the program; and (3) how they experienced the research processes.

Materials and methods

Study design

This qualitative study was nested within the broader SIFT IT trial [25]. The SIFT IT trial was a multi-centre feasibility randomised controlled trial (RCT) which compared a group-based social cognition treatment program to waitlist control for people living in the community with an ABI. The trial protocol was prospectively registered on the Australian New Zealand Clinical Trials Registry (Trial ID: ACTRN12617000405314). Semi-structured interviews with participants were embedded within the RCT protocol, whereby all participants who completed the SIFT IT program were invited to interview at either Time 2 or Time 3

time-points (see [Figure 1](#) to illustrate relevant time-points interviews that were conducted within an abbreviated consolidated standard of reporting trials [CONSORT] diagram). The consolidated criteria for reporting qualitative research (COREQ) checklist [43] informed the reporting of this data to comprehensively consider and acknowledge factors relevant to the research team, study design, findings, analysis and interpretations (see [Supplementary Material File 1](#)).

Researcher characteristics and reflexivity

The lead researcher (AC) held a doctoral degree in Clinical Psychology and worked as a clinical psychologist whilst undertaking a Doctor in Philosophy (PhD), of which the social cognitive intervention feasibility trial was a key component to this postdoctoral degree. For this reason, AC held key roles and responsibilities at all stages of the research process, including as intervention developer, intervention facilitator, post-program participant experience interviewer, and primary person responsible for data analysis. Further factors relevant to AC and her researcher characteristics are described in [supplementary](#)

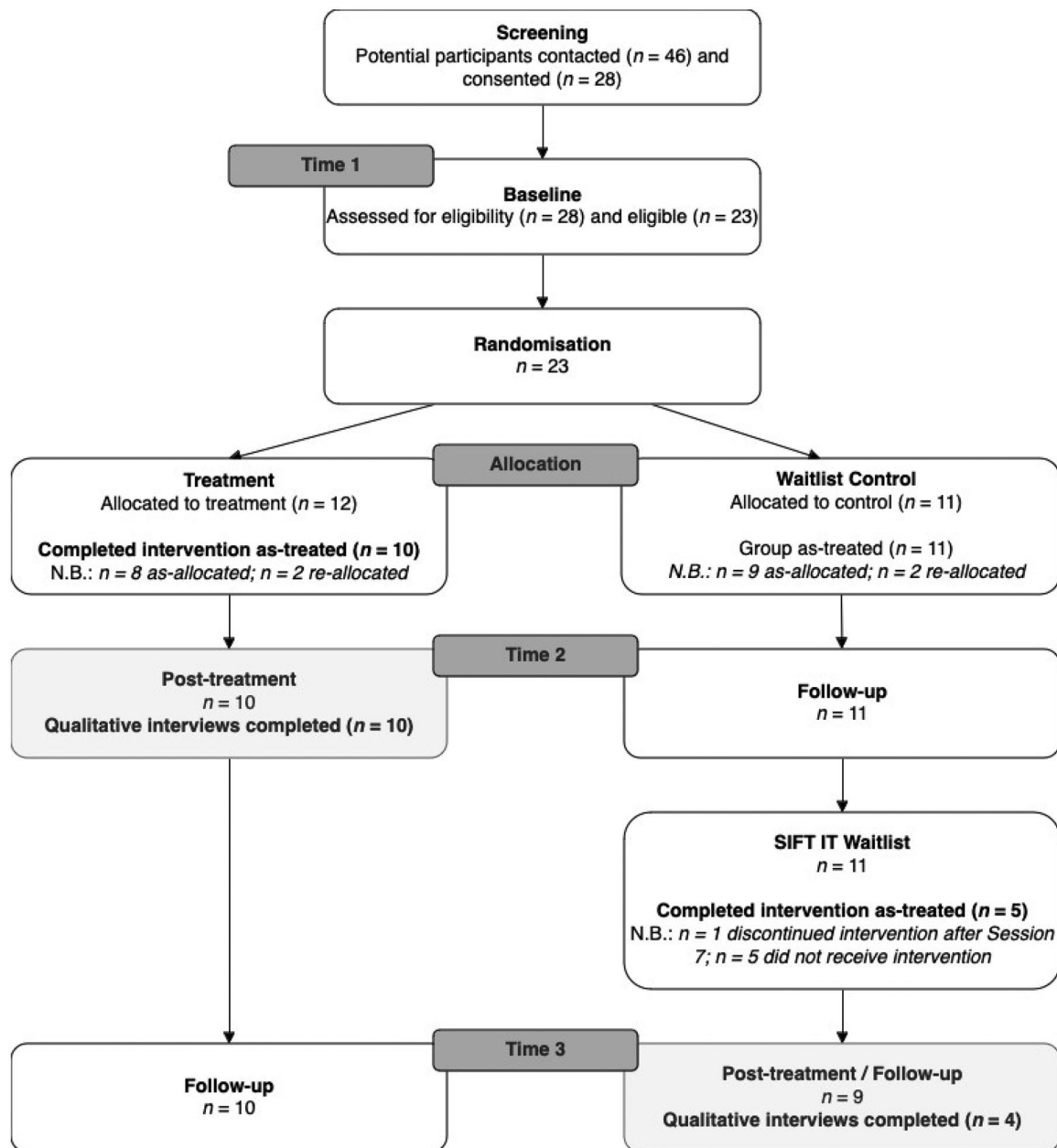


Figure 1. CONSORT flow diagram with interview collection times highlighted.

material file 1. Authors SM and MK were also extensively involved in all aspects of the research process in their role as supervisors on AC's PhD program: SM as a professor in clinical neuropsychology, with many decades of working and researching psychosocial rehabilitation after traumatic brain injury with a special interest in emotion and social cognition remediation; and MK as a clinical psychologist also working in an academic setting and researching social cognition in an older adult population.

The second author (NB) was sought as an independent researcher with experience in mixed-methods intervention research in the brain injury population and, specifically, *without* prior involvement in the SIFT IT program's development. NB held qualifications in Speech Pathology and a PhD in this field in which he specialised in cognitive-communication disorders after brain injury. NB worked as a speech and language therapist and academic researcher in a different, yet still English-speaking, country to where the research study was carried out and other authors based.

All authors were mindful that their clinical backgrounds shaped the way they interpreted participant data. It is acknowledged that AC's clinical training and previous work synthesising social cognitive constructs and prior interventions from the literature likely influenced how she interpreted participants' feedback (see 1, for a narrative review of social cognitive constructs and intervention components that informed her thinking). Strategies undertaken to mitigate risks of bias from holding these roles are discussed in their relevant sections below. It is for these reasons, multiple data checks and continual discussions were incorporated with NB during data analysis, who had no prior knowledge of the SIFT IT program nor any contact with participants.

Participants

Participants across the wider study were recruited over a 15-month period (June 2017 – September 2018) from community neurorehabilitation services in two metropolitan Sydney services, Royal Rehab and Liverpool Hospital, one regional service, the Hunter Brain Injury Service and from the community *via* private practitioners, brain injury organisations (Brain Injury Australia, Synapse), and the UNSW Neuropsychology Lab's research database.

Inclusion criteria included: (1) a moderate to severe non-progressive acquired brain injury (e.g. traumatic brain injury [moderate=Glasgow Coma Scale (GCS) score of 9–12 and/or post-traumatic amnesia (PTA) duration 1–24h; severe=GCS score of ≤ 8 and/or PTA duration > 24 h], stroke, anoxia, brain tumour [severity determined by extent of cognitive or functional impairments]) [44–47]; (2) at least six months post-injury; (3) residing in the community for at least six months; (4) between 18 and 65 years of age; (5) sufficient cognitive and English language capabilities to participate in assessment and group tasks (determined through behavioural observations at baseline); (6) performance at least one standard deviation below normative sample mean on one or more social cognition measures at baseline. Exclusion criteria included: (1) neurodevelopmental disorder; (2) substantive language impairment; (3) recent history of major psychiatric crisis (e.g. suicide attempt, psychotic relapse); and (4) uncorrected visual or hearing impairment.

Ethical approval was granted by the Sydney Local Health District Ethics Committee (HREC/16/RPAH/572) and informed consent was gathered for all participants in accordance with the Declaration of Helsinki.

Participants invited to interview

Fifteen participants (all males) completed the SIFT IT program (10 in the Treatment arm and five in the Waitlist arm). All 15 participants were invited to take part in the semi-structured interview following completion of the group program and 14 participants agreed to take part. The participant who did not agree was unable to make an extra appointment after his Time 3 (post-Waitlist treatment) assessment due to commencing an education course. Participant characteristics (including their pseudonyms) are reported in Table 1.

Trial intervention

The SIFT IT social cognition group treatment program (see [20,25]) consisted of 14, 90-min, face-to-face group sessions conducted weekly. Groups were closed with two to four participants per group and were facilitated by a clinical psychologist (AC). The program included five modules that aimed to

Table 1. SIFT IT completer participant characteristics.

Participant pseudonyms	Age (years)	Education (years)	Type of injury: mechanism (if TBI, PTA duration)	Years since injury
Treatment arm				
<i>Group 1</i>				
John	57	14	TBI: MVA (59 days)	11
Liam	20	10	TBI: MVA (171 days)	1
James	61	18	TBI: fall (unknown)	1
<i>Group 2</i>				
Pat	45	12	TBI: fall (14 days)	4
Nate	40	14	TBI: fall (18 days)	13
Billy	51	12	TBI: fall (24 days)	2
<i>Group 3</i>				
George	51	12	TBI: pedestrian in MVA (57 days)	1
Graham	59	16	TBI: MVA (86 days)	8
<i>Group 4</i>				
Karl	37	12	TBI: workplace injury (unknown)	2
Avinash	23	14	TBI: MVA (70 days)	2
Waitlist arm				
<i>Group 1*</i>				
Mark	61	12	TBI: sporting injury (unknown)	15
<i>Group 3</i>				
Frank	51	12	TBI: fall (21 days)	3
Claude	59	12	ABI: stroke (ICH)	9
<i>Group 4**</i>				
Danny	45	14	TBI: fall (46 days)	1

*Other group participant unable to attend interview due to education commitment.

**Other group participant did not complete group program.

Abbreviations: ABI=acquired brain injury, ICH=intracranial haemorrhage, MVA=motor vehicle accident, PTA=post-traumatic amnesia, TBI=traumatic brain injury.

comprehensively target the processes involved in social cognition: Module 1 targeting the understanding that we “**Sense** and **Interpret**” social cognitive cues; Module 2 targeting “**Feelings**,” i.e., emotion perception; Module 3 targeting “**Thoughts** and **Intentions**,” particularly how we interpret social cognitive cues to form interpretations and perspective take; Module 4 targeting “**Try** your response” in choosing adaptive social behavioural responses; and Module 5 targeting a review of the **SIFT IT** processes and establishing a therapy blueprint. The program was informed by cognitive-behavioural therapy and neuropsychological rehabilitation principles.

Data collection

Participants who completed the SIFT IT program were invited to take part in a semi-structured interview within two weeks of finishing the program. Interviews were conducted after the Time 2 assessment for the 10 Treatment arm participants and after the Time 3 assessment for the four Waitlist arm participants. Interviews were conducted on a separate occasion from the Time 2 or 3 assessment for nine of the participants to minimise participant fatigue. Interviews were organised with participants face-to-face in a private, quiet, setting: four took place at the participant’s home; four took place at the university’s research laboratory; and six took place at the participant’s local brain injury service. One participant requested their close other also attend the interview to provide feedback (a female ex-partner and co-parent); all other interviews were conducted with participants individually. Interviews lasted an average of 46 min, ranging between 11 and 75 min. The 11-min interview was an outlier in length due to the participant’s fatigue on the day of the interview and an inability to reschedule to a more suitable time (due to a planned surgery). In the joint interview with the participant and close other, both were given opportunities to provide feedback with questions directed to each of them at times. Close other feedback that was portraying the participant’s experience was checked with the participant for his reflection and elaboration when relevant. The close other’s feedback was not included in data analysis presently due to being the only close other to contribute in this way.

Interviews were conducted by the lead researcher (AC) who had also facilitated the SIFT IT group program. A semi-structured interview guide was used to direct questioning in line with the study’s aims: open-ended questions were asked to elicit feedback on the acceptability of the SIFT IT group program (including its content and structure); the perceived efficacy of the intervention; and the acceptability of the research process

(see [Supplementary Material File 2](#)). Participants were prompted when needed to provide specific examples to extend their responses and reduce ambiguity. Feedback was checked throughout using active listening techniques, with the interviewer summarising information provided, to ensure a shared understanding of information the participant communicated. Considering the interviewer had an established relationship with participants, participants were explicitly asked to share negative, or constructive, feedback about the program at the beginning and throughout the interview process. Interviews were audio-recorded, with the participant's permission, and were later transcribed by AC. No payment was offered to participants for their time. Steps were taken to recognise bias during data analysis, described below, due to the interviewer's role as therapist and the established therapeutic relationship with participants.

Data analysis

Data analysis followed the six phases of thematic analysis proposed by Braun and Clarke [48]. In the first stage (1), interviews were transcribed verbatim with all identifying information removed and checked by AC two to three times. In the second stage (2), initial codes were inductively generated to capture salient units of information from interviews. Coding and theme generation were "data-driven" in the sense they were undetermined prior to data analysis [49,50], yet it is still recognised that AC's conceptual understandings of social cognition likely played a role in how feedback was interpreted (see *Researcher characteristics and reflexivity*).

Coding reliability approaches were used to recognise the bias related to AC's background as interviewer, therapist, and person responsible for data analysis [51]. Three randomly chosen transcripts (21% of the total sample) were manually coded separately by AC and an independent qualitative researcher (NB). Codes generated were discussed collaboratively to reach a shared understanding and consensus. Following this, all transcripts were entered into NVivo version 12.0 to manage data analysis. These initial codes were then iteratively updated in a non-linear approach using constant comparative analysis [52] to support further refinement of codes across the dataset and, as part of the third stage (3), generate initial categories and themes [53]. To maintain coding reliability, three further interviews (21% of the total sample) were separately reviewed by NB (who resultantly reviewed six, or 43%, of the total sample of interviews across these steps). NB additionally reviewed the largest, most prominent, theme (20% of the five themes identified), following which the coding was collaboratively reviewed and refined to support conceptualisation of initial themes.

The fourth stage (4) involved organising and reviewing initial themes into main themes, sub-themes and categories. The fifth stage (5) of conceptualising, defining, and naming themes was further updated using the constant comparative analysis method [52] within the theoretical framework described above, with iterative collaboration between all members of the research team. The final list of themes, sub-themes, and categories was tabulated and described with illustrative quotations from participants. This supported the final, sixth, stage (6) of data analysis: producing the written report of these themes to further our understanding of participants' perspectives on the feasibility of the SIFT IT program and research experience.

Results

Participants recounted a range of experiences in relation to the group program and the ways in which they perceived changes to their social cognitive processing skills. These experiences were overwhelmingly positive, even for two participants who reported they did not perceive any social cognitive changes following participation in the SIFT IT program. Most participants also suggested ways in which the program could be modified to further strengthen perceived gains. Five themes were conceptualised from codes and categories identified: (1) social cognitive processing changes; (2) impacts of change; (3) valuable program components; (4) biopsychosocial influences; and (5) moving forward (see [Figure 2](#)). This figure shows the first theme, *social cognitive processing changes*, as central to participant experiences in which the three sub-themes correspond to interrelating concepts. The result of these changes is depicted in the second theme, *impacts of change*, for the individual (in which there is, again, overlap with the changes described in the first theme). Participants further discussed aspects of the intervention that supported change, *valuable program components*, as well as other *biopsychosocial influences* that could affect outcomes (during

participation and in relation to social cognitive competence more generally). The fifth theme, *moving forward*, detailed areas in which participants were thinking about the future, both in relation to their own anticipated progress following participation as well as the broader clinical and research implications of the SIFT IT program. Arrows indicate the purported relationships between these themes in Figure 2.

Social cognitive processing changes

The first theme, *social cognitive processing changes*, referred to ways in which participants' perceived change in their social cognitive skills following completion of the SIFT IT program. The nature of changes described formed three interrelating subthemes: *social cognitive awareness*, *perspective taking flexibility*, and *responding differently in social situations*.

The development of *social cognitive awareness* following the program was frequently described, in which participants recounted greater insight and metacognitive awareness of self- and other-social cognitive processes occurring in social situations: *"it's broadened my thinking, broadened my mind, as to, like, what I'm assuming, what I'm seeing, so-and-so's got on their mind. What they think about my... What I'm saying... If they're interested in what I'm saying"* (Liam). This was exemplified through reflections of social interactions by most participants in which they recognised occasions, or patterns over time, when they had misinterpreted social situations with negative interpersonal consequences, described by Billy as *"leaving a mayhem of destruction behind me,"* that they were now able to notice non-judgmentally:

Sensing the behaviour and the way of the person, or the person's expressions, are the main thing. So if I look into something and I feel he's judging me, he's getting angry, like, why I'm standing there, and if he is concerned why I'm standing there. So this group has helped me to realise more that this, this is not happening at all. This is only in my mind. This is just, this is just, these are just my thoughts. It's not like the world works like this. So it helped me to overcome these issues and socialise more. (Avinash)

Further, evolving changes to awareness of social cognitive processes and personal relevance to participants was evident in some participants' descriptions of how their motivation to attend the program changed over time, shifting from altruistic reasons to support the broader brain injury community to

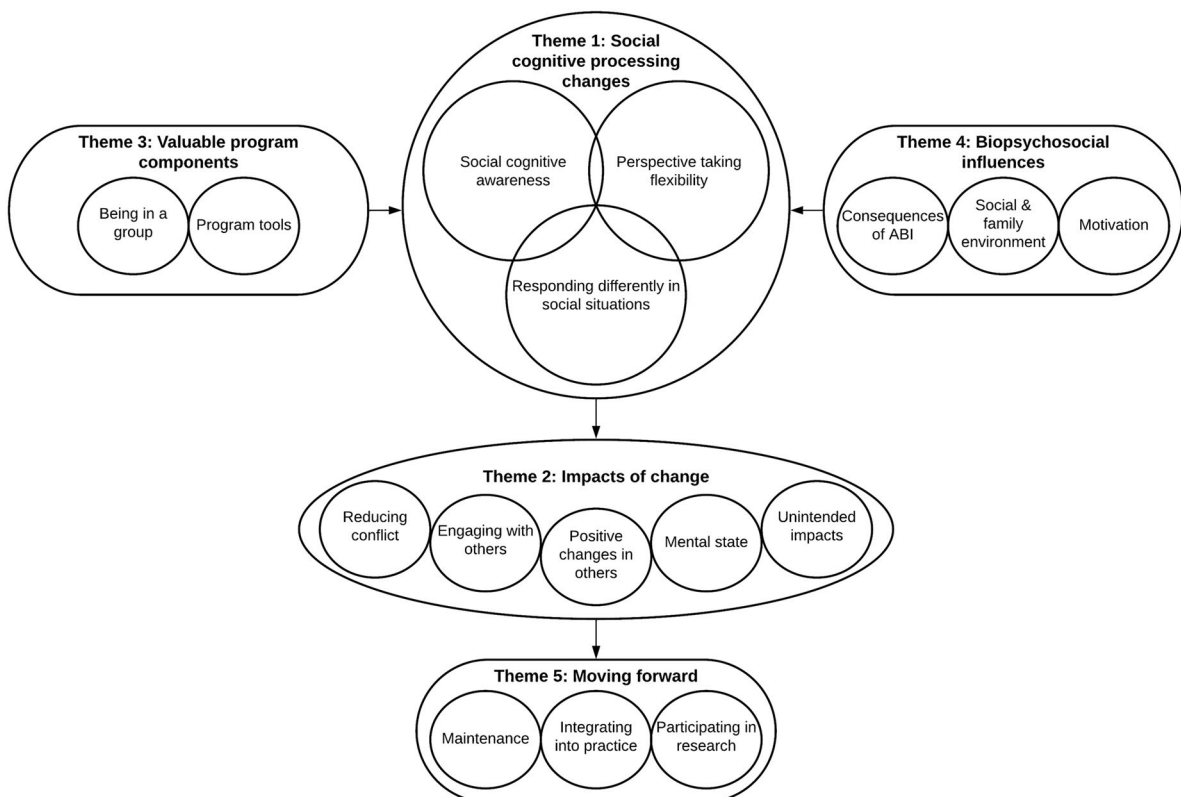


Figure 2. Illustration of main themes and subthemes detailing participants' SIFT IT program experiences.

personal reasons of gains being experienced from attendance: *"I was starting to get a tool that was going to benefit me"* (Mark).

Related to becoming more aware of social cognitive processes, participants also frequently reported changes in their *perspective taking flexibility*. Once aware of their own thoughts and interpretations of a social situation, many participants described the active ways in which they began to challenge their initial interpretation of an event to: *"think about what else is going on"* (Billy); and consider possible alternative ways of interpreting self- and other-thoughts and intentions:

I use, like, my experience of jumping to conclusions and, and working myself up and getting angry but. When you look at it with, and I say, like, there's three glasses you can look, that you can choose to look through. And then you have to think what that other person, what glasses they're looking through. (Karl)

This ability was related to some participants reflecting that they were more able to accurately gauge another's emotions or mental state: *"being able to really put yourself in the other person's shoes ... if you can do it, you can really see where they're coming from"* (Graham); they were better able to tolerate uncertainty in the way they had interpreted a social situation: *"if I'm having sort of, bit of, a disagreement with someone else, I could be incorrect. When before I didn't think... I was always right"* (George); and they were more accepting of others' opinions and feedback directed towards the participant. Even so, a few participants described how this could still be a challenge. For instance, Danny recognised the program *"has made me more aware of things,"* yet it still takes him time, and prompting from his wife, to understand how he has misinterpreted a situation:

In the moment I don't see it. Like I can be very inappropriate. And, um, I don't mean it. But then when I'm, um, well, my wife's really good, she really gets me. Like, she says to me 'hey'. And, um, I sit down and I think about it. It takes me a while. But then I think, 'OK, she's right'. But I still haven't, I still haven't mastered the fact that I can't see I'm wrong sometimes.

The final change that many participants reported was in the way they were *responding differently in social situations*. Most commonly, participants described considering the situation in more detail (to *"stop and think"* as Pat and Billy described) to avoid an impulsive reaction:

It's made me think more deeply about my replies and responses in social interactions ... my responses and my contribution to the group conversation was more considered and not just impulsive" (James)

Participants reported examples of how they would do this: for instance, Pat stated *"I've got that internal thing in me saying, Dylan [pseudonym for son] saying to me "calm down" even when he's not there;"* and Graham reflected he had *"to firmly engage the brain before putting your mouth in gear."* Some participants also commented on strategies through which they attempted to collaborate or gather more information when there was ambiguity in what others might be thinking or intending:

So I developed the way, when I'm not sure what they're saying, with me wife, or with whatever, I'll ask them. So, I'll ask 'what do you, what do you mean?' You know? But not in an obstructive way, I'll call it. Cause you can ask people what they mean, but you've sounded too aggressive. Then they're not gonna really wanna tell you ... they're going 'oh, you're getting upset' ... so you've gotta passively get to the more information, you know? 'Can you tell me more about what you're trying to say?' ... so then they can help you understand if you're not sure. (Billy)

Two participants, John and Nate, reported not perceiving any changes to their social cognitive processing skills. Even so, both participants provided examples of how they had become more aware of problematic ways they could respond in social situations and examples of how they sometimes responded differently in social situations: e.g. Nate reflected that *"I think I might be a little arrogant in the way that I'm trying to help"* and that *"sometimes I'm slowing down a bit more and thinking things through a little bit more."*

Impacts of change

The second theme, *impacts of change*, referred to the degree in which the intervention impacted on participants' lives, including the social interactions they had, how they perceived others changed their attitudes and behaviour as a result of the changes the participant experienced, the impact this had on their mental state, and other impacts they had experienced.

For about half of the participants, they reported that the changes in their social cognitive processing skills supported them in *reducing conflict* with others, resulting in more successful social interactions:

I ran into an old school friend of mine and I, I saw an opportunity to use the SIFT parts that I'd taken on board and, um, the nerves to, um, take inquiries to him in a certain direction. Uh, I could've gotten really tough on him or I could have, uh, eased up. Which is what I decided to do, uh, through SIFT IT's efforts ... that gave him a better impression of myself. And, uh, as a result we chatted for about 15 more minutes. (Frank)

Most remarkably, one participant, Claude, with an Apprehended Violence Order against him, stated he was more able to *"just avoid the whole thing"* and *"keep away"* from the defendant.

For several participants, the impact on their social interactions was also related to *engaging with others*, such as friends: *"the group really pushed me to reconnect and make new friends"* (Liam); their family: *"I'm more interactive with the kids, I'm more pleasant. I'm less stressed about it because I can think differently about it"* (Billy); and the broader community: *"it has helped me go out a little bit more. Like, to the shops more"* (Karl).

Several participants also noted that, as a result of their own behaviour changing, they perceived *positive changes in others* too: *"I would say the changes in me, the people have liked"* (Avinash), and that the other person in the interaction had subsequently favourably changed the way they responded to the participant:

This is where me wife's changed that a little bit now. Even though I've said it to her the other day, I said, I've told her that I was grateful of how she changed the way of, stopping me, calming me down ... when they notice you're not behaving the way you were, but they know you still got some stress issues over things, then they can calm you down in a nice, peaceful, passive sort of way. (Billy)

Many noted that they had experienced positive changes in *mental state* as a result of participation, such as improved mood: *"I didn't used to get happy. So now I'm making, I'm also making, like, humorous comments and telling jokes ... I'm getting more happy now"* (Avinash); confidence, and post-traumatic growth:

You get a, you sort of, got a bit of a chance to start again in terms of becoming who you, the best person you can be. But you've got to go through the battlefield to get there. And, sort of lucky for me that you did ring me, because I'd still be struggling. I'd still be, I'd still be leaving the destruction. (Billy)

For one participant, however, who reported becoming more aware of how he misinterpreted social situations but was not yet able to respond differently in the moment, the impact of this increased insight on his mood was negative:

I know in myself, I know how I'm reacting to things, how I am after I... Because all I've ever wanted is to go back to my job and I know that that's never going to happen. I know, I accept that now. That's never going to happen. And it's really killing me. (Danny)

Participating in the SIFT IT program also had some *unintended impacts* for a few participants. These generally related to the practicalities of group attendance, such as decreasing reliance on paid support workers and better planning and organisation to support attendance.

Valuable program components

The third theme, *valuable program components*, encompassed the factors about the SIFT IT program that supported the social cognitive processing changes participants described above. Two subthemes were conceptualised: factors related to *being in a group* that fostered a therapeutic environment to support change; and the *program tools* that supported participants with this.

The beneficial impact of the group was noted by almost all participants, who described the experience of *being in a group* very positively. Not only did participants describe enjoying the social aspect of meeting others, but many also described developing a sense of camaraderie with their other group members through shared, similar, experiences relating to others and the challenges they experienced since their brain injury: *"I think one of the biggest things is to come in contact with people with the same problem, although different. Same problem but different, you know? Um, so then you're not so isolated"*

anymore" (Billy). Most participants described feeling able to disclose their own personal vulnerabilities as they got to know other group members: *"it made me comfortable. And like, I mean, I didn't open up until a bit down the track, but I, knowing those people, made me comfortable to communicate those problems to you"* (Liam); and that they felt a sense of reciprocity to disclose their own challenges after hearing about others' challenges: *"I thought that was quite brave of him [other group member] to volunteer that. And when he, when he said that, I think that made me feel more relaxed about talking about things that were close to my heart"* (James). A number of participants stated that the reason they felt able to share their vulnerabilities was due to their perception the group was an *"open"* (Frank) and *"safe environment"* (James), in which they *"didn't feel threatened"* (Pat).

One participant also reflected positively on the how they had been able to respond differently *"in-vivo"* to an altercation with their fellow group member:

If that had happened in the first, second, or third episode, my reaction would have been a lot different. So it was, so that's what I find beneficial of having done the time before that to understand that's where that person was seeing things but. To be able to sit, and, like, I bit my tongue a lot, but it was good to just hear that person's point of view and then speak your point of view. (Karl)

Participants also talked about the specific *program tools* that had supported them to change their social cognitive processing skills. These included the training materials within the SIFT IT program, how the topics were made relevant to them, and the setting and delivery of the program. One participant noted that he appreciated the nature of the program focus: *"it wasn't 'we're going to make you behave like this'; this is 'how do you perceive other people's behaviour and how do they perceive your own behaviour?'"* (Pat). Components most participants discussed as beneficial included the heuristic techniques to support perspective taking:

It'd be about the red, green, and blue glasses. Cause that's a good way of making you understand how different people look at the same circumstance. So what you, sort of, recognise is you are all three people at different times ... that can help you, that's how you start to use the 'what's going on here' thing ... so you're going, well, am I red, am I blue, or am I green right now? (Billy)

Content relating to emotion perception and considering responses were also mentioned by participants as helpful. About half the participants also referred to using *"SIFT IT"* as a self-regulatory cueing strategy: *"you were able to get these building blocks so that you can then use the SIFT IT and use that to better understand people's requirements and use that almost as a negotiating tool"* (Mark). A minority, however, mentioned that the acronym could be confusing despite it being helpful as a cueing strategy: *"I know it means something, but not sure what ... I think 'sifting' through the information is, is probably a good analogy"* (James).

Participants further discussed the ways program materials were made relevant to them. Many noted that they were able to relate in-session activities to their own lives: *"I really enjoyed the, um, like how we had to come up with examples ... because then we can apply that to real life situations and real life interactions"* (Liam); although some noted they would have preferred materials to have had more specificity to their own life situations: *"some of the stuff there could be gone less textbooky and more, alright, this is for our specific group"* (Pat). Goal setting and reviews were also mentioned by some participants positively to support them to implement changes in their daily lives: *"what I'd never had before was setting goals and managing those goals ... that's something I've started to do now. I found that was a good thing"* (George). Others noted that the goal review process highlighted discrepancies between their own and others' perceptions, and that goals set at the beginning of the program became less relevant as the program continued: *"they just got less relevant ... as the weeks progressed, I would have thought 'oh, that's a goal that I should have put in here in the first week'"* (James). Homework activities were also described as beneficial to support contextualisation of program materials, although some found this self-directed introspection challenging: *"it's sometimes very confronting to, um, you know, work out what you're thinking and your experiences are ... tells you the truth about yourself"* (Graham). Other barriers to homework completion were also noted, including memory difficulties and lack of social opportunities to identify lived experiences of homework topics.

Participants largely reported that psychoeducation material included in the handouts was also relevant to them and that handouts to support in-session activities was beneficial: *"those sheets were very*

helpful to explain everything and put everything in perspective" (Graham); and that they would continue to use the booklet following the program finishing. Related to these experiences, participants also talked about aspects of the program's set-up and suggested ideas about how the SIFT IT program could be modified, with their reflections summarised in Table 2. Finally, about half of participants made comments about how the facilitator had supported their engagement, therapeutic alliance, and learning of program materials: *"you had a marvellous, um, relaxed manner ... you were like a coach and a guide in helping them to answer their questions"* (James).

Table 2. Participant reflections about the delivery of the SIFT IT program.

Program aspects	Description	Illustrative quotes
Group set-up		
Size and length	Group size: - Groups with three participants largely reported being satisfied with group size. - Groups with two participants reported size being adequate but that an extra group member would have been helpful. - Majority stated the maximum group size should not exceed five. Session length: - Most stated 90 min was ideal whilst others suggested sessions could be slightly longer (two hours), with a rest break incorporated. Program length: - Most stated they were satisfied with the program length, whilst some suggested a longer program length would be beneficial. - Others suggested a follow-up session would be helpful to support maintenance.	"Having three meant that each of us could listen and follow what was being said and make a contribution as and when we felt appropriate" (James). "Would have been interesting to have a third person involved" (Graham). "More than five would have, would have made it very difficult. Because everybody's just trying to get what they can out of it and what they understand the others are getting out of it" (Mark). "Right on my limits of concentration in doing things" (Karl). "Probably could have gone longer ... it would just push me along even further" (Liam). "In six months' time, or a year's time. See how we really cope, have we really learned something? And have we, and have we've really put the, um, different attitudes together?" (Claude).
Family involvement	- A few participants suggested that active involvement of a family member would be beneficial, such as to proactively encourage the participant to discuss sessions with a significant other or include their significant other in sessions. - One participant, however, perceived this could be problematic.	"I think it's gotta be, um, I dunno, pushed a little bit harder. Go home and talk about this" (Pat). "Every second week you bring your significant other" (Billy). "Patient will feel more shy, they would not speak at all" (Avinash).
Adaptations	A couple of participants suggested offering more options to provide written responses in session rather than rely on verbal dialogue.	"My voice is a bit, sort of, slow, a bit loud, and I get a bit stumbly in my voice ... if I could provide written answers, I'd probably do a lot better actually" (George).
Group content		
Materials	- Some participants suggested that topics could be covered in more depth, e.g.: - To consider emotions beyond the core emotions. - To include discussions on virtual interactions. - To consider ways of responding in more nuanced social interactions, such as when pursuing a romantic relationship.	"There's so many emotions out there, it's hard to link them all" (Liam). "A lot of stuff you get is, these days, electronic and, um, email. You don't, you can't see a face" (Mark). "When does 'no' sometimes mean maybe, or should, does it always mean 'no'?" (James).
Exercises	- One participant suggested introducing a character, like the SCIT attribution bias heuristic characters, in later sessions to reflect responding in a co-operative way. - One participant suggested that some sessions could be conducted in the community to provide the opportunity for in-vivo exposure to social situations.	"Maybe there could've been, towards the end, there could've been an extra filter put in there. Dunno what colour it'd be, maybe Casual Colin. And he would say, 'let's see if we can work through the situation.' Casual Colin, oh, let's see if we can work through this. So he's not blaming himself, not blaming someone else, not blaming himself, and he's not like, whatever happens. He's trying to work it through, which is what we, we did. That's what we were doing. We were working through it" (John). "I think the group should do at least one or two sessions outside the hospital, like a restaurant or KFC, McDonald's, anywhere. Sit on a table and see how the patients react to the other people. The therapist will come to know about their socialising skills. So that would be really helpful" (Avinash).

Biopsychosocial influences

The fourth theme, *biopsychosocial influences*, represented participant descriptions about what helped, or hindered, their social cognitive processing skills and changes experienced following the SIFT IT program. Subthemes included how broader *consequences of ABI* influenced participants' social cognition, how a participant's *social and family environment* could impact these skills, and the impact of *motivation* on effortful social cognitive processing.

Memory was most often discussed regarding the broader *consequences of ABI*, in that it could be challenging to remember social interactions and the outcomes from them, although a few participants noted the benefit from some of the adaptations made to the SIFT IT program to compensate for memory difficulties, e.g.: *"it's a good way for putting posters up ... it gets you actively thinking what processes, cause then that activates your memory and you do remember those sorts of things"* (George). Other challenges some participants reported experiencing (both historically and currently) included emotional and behavioural dysregulation: *"the lability thing is hard to overcome with that because, you'll just, out it comes"* (Billy); and one participant commented on how his brain injury-related hearing loss could influence how others interpreted his social behaviour.

Participants also noted that their social cognitive functioning could be influenced, positively or negatively, by their *social and family environment*. Many noted that their social circles were smaller since their injury: *"since the stroke all my friends, basically, washed me away"* (Claude); which impacted on their ability to implement program materials in their everyday lives: *"my lifestyle is very limited, so I didn't have many opportunities sometimes to consider, um, some point, because I don't have that point in my life"* (Mark). A couple of participants also noted how their family's beliefs influenced how they interpreted the participant's social behaviour, both in relation to the "invisible" nature of social cognitive deficits: *"some people see your physical recovery and they don't see all of the other injuries"* (Pat); and, alternatively, the supportive role they could provide when they were aware of them: *"you're [referring to close other] more understanding. You've actually taken more time to think 'poor fucker,' excuse the language, than anyone else"* (Pat).

Finally, participants discussed how they increasingly recognised the effort required to actively consider social cognitive processes during social interactions, and thus there was a degree of *motivation* necessary for them to want to engage in these thinking processes. The level of their motivation during participation could be impacted by their mood: *"you might come in feeling quite despairing and sad. And that reflects in how you, how you interact with the group as well"* (James).

Moving forward

The final theme, *moving forward*, symbolised aspects related to both individual participants and the SIFT IT program's future, with subthemes including *maintenance* of treatment gains; considerations about *integrating* the SIFT IT program *into practice* within clinical rehabilitation services; and reflections about *participating in research* to guide future trial protocols.

About half the participants considered how, or whether, they would be able to maintain treatment gains into the future: *"I think it will help me in the future, as long as I keep thinking about it. So I think that's the... I think that'll be the hard thing for people, is to keep trying to think about it"* (Karl); and some spoke about ways in which they planned to do this: *"I can take this away, take the SIFT IT, um, take the pages away and use that as a reference point, uh, once a week, at least from here on in"* (Frank).

Many participants expressed strong beliefs that the SIFT IT program would benefit from being integrated into clinical services: *"I feel that all the patients should go to this group"* because *"the group will help them to overcome the issues that we are facing now"* (Avinash); and that a focus on the emotional and social consequences of ABI had been missing from their rehabilitation experiences more generally: *"nowhere in all of that do you get any, kind of, we'll call it insider education about how your emotions are gonna be now"* (Billy). Many also talked about the optimal timing for an intervention targeting social cognitive skills and reflected that trying to intervene early post-injury, during inpatient rehabilitation, may not be helpful: *"when you're in rehab, you don't appreciate it. You can't wait to get out of there ... you think 'oh, I can do it, I can do it.' But in reality, you can't"* (John). Most suggested that offering the SIFT IT program soon after discharge into the community would be most beneficial due to increased insight

following this transition: *“once they get discharged and they start understanding what they suffer will go on for years”* (George); and due to having more opportunities for social experiences once in the community: *“you’re living day-to-day lives, and various experiences are going to happen to you, and you’ll be able to bring them up in sessions and talk about them”* (John).

In considering participants’ reflections about *participating in research*, most did not show a thorough understanding of the study procedures, neither in relation to the assessments: *“I don’t remember the first assessment”* (John); nor the randomisation process: *“the randomisation process, what’s that?”* (George). No differences were noted between Treatment and Waitlist arm participants. Even so, the majority of participants stated they were grateful for the opportunity to take part in research for both altruistic and personal reasons: *“I’m very honoured to have participated in, in that research because it’s, it’s assisting others and it’s giving back something to those who may need it. Um, and it’s also helping yourselves out”* (Liam); and that they hoped it would be of benefit to others in the future: *“I want to be there to help, for the next person that gets their head knocked around and say, well, this has gotta be better than, you know ... I want to make sure that it’s better”* (Mark).

Discussion

This study explored participants’ experiences of the SIFT IT program and provided insights into the feasibility of the SIFT IT program from the perspective of participants’ own lived experiences.

Acceptability of the SIFT IT program

Participants’ descriptions about their experiences of the SIFT IT program were overwhelmingly positive, even amongst the minority who did not perceive any change in targeted skills from the intervention. Whilst some participants reported a perceived lack of relevance and early concerns about attending the program, these attitudes changed once the group program began. This finding highlights that, for some, their perceptions of acceptability of the intervention changed dynamically through the process of experiencing the intervention [29]. Participants reported perceiving a relevance, and benefit, to themselves from attendance and they were able to articulate specific program components they viewed as integral to this process. The group format of the program was noted as particularly important, including how participants appreciated the opportunity to meet others living with similar experiences, how this supported a sense of camaraderie, and ultimately how this enabled them to disclose personal vulnerabilities and experience change from the program. Further, participants also highlighted the importance of the therapeutic alliance, which is often thought of as a “precondition” to favourable outcomes in psychotherapy and community rehabilitation [54–56]. These reflections implied that the non-specific therapeutic components of the SIFT IT program were implemented as intended through the creation of a safe space for peer disclosure, feedback, and encouragement in order to “work together” in the group setting [56,57]. This, in turn, appeared to promote social connection amongst participants, and relatedly, reduced their experiences of social isolation, similar to other reports of participant experiences of group interventions after ABI [31,36,42,58]. Participants, particularly those in group sizes of two, did suggest that a slightly larger group size would have been preferable. Such feedback was also provided by participants in SIFT IT’s “proof-of-concept” case study [20]; highlighting that, whilst a group size of two was considered adequate, including three to four participants would be more acceptable to promote peer interactions and support.

Participants stated that no aspect of the program content was unacceptable or perceived negatively. Participants perceived that the specific program materials (module content and exercises), as well as the incorporated strategies to support contextualisation (individualised goal setting, handouts, homework), supported them to experience social cognitive processing changes and ensure relevance to their everyday lives. Positive attitudes towards the focus of the program, i.e., not on *what* they did in social situations, but on *how* they were thinking about the situation, also indicated acceptability in the program’s focus away from more traditional social skills interventions (e.g. [59,60,61,62]). Participants did raise suggestions for how program components could be modified to further support perceived gains

experienced. One suggestion was to include a metaphor, or heuristic technique, like the SCIT attributional style characters, to prompt them to choose a co-operative, collaborative, response versus a passive or aggressive response. Incorporation of the heuristic techniques, both the SCIT characters and the “coloured glasses,” featured prominently in participants’ experiences of the SIFT IT program and appeared to support participants’ social cognitive metacognition (increasing awareness of their own social cognitive processing biases and cycles) and their ability to generate alternative perspectives (considering how a social situation could be perceived through the different glasses or as different characters). Such descriptions indicated that such use of metaphor to convey these complex concepts, as promoted by Ylvisaker [63], achieved their intended outcomes [64]. Still missing, however, was an external cueing strategy to move one’s social behavioural response beyond these biases, which could be incorporated in future treatment development through further use of metaphor and heuristic techniques.

The role of including family in the intervention was also raised by participants. As had been encouraged throughout delivery of the SIFT IT program, some mentioned the benefits they experienced from family involvement (discussing session content with them after sessions, seeking feedback, and support from their family in implementing strategies), but the extent of family involvement was independently decided by each participant rather than formally facilitated by the program therapist. Some social cognitive interventions have adopted active participation by family members or close others (e.g. [65,66]); families or close others have often been involved, to some degree, in other complex interventions after ABI (e.g. [57,67–69]); and supporting practice opportunities with family has been recommended in clinical practice guidelines [70]. Even so, one participant strongly believed that including his family would have been a barrier to his engagement in the SIFT IT program and it is likely family presence would have impacted the group dynamic [71,72]. Further, there may be additional challenges in attempting to actively involve family members who may already experience significant carer burden [35] and not all participants may have access to family support. Despite this, the importance and value of actively including family in an individual’s rehabilitation is well recognised [73–77]. Increasing the competence and capacity of family members to support the individual living with ABI to learn and apply adaptive social cognitive processing strategies may, thus, be of benefit and will require further consideration into how this could be flexibly implemented within the SIFT IT program whilst being mindful of family burden (e.g. through telephone calls or joint sessions: [66,78]).

Other modification suggestions related to how the group was set up and delivered, such as offering sessions in the community and offering a follow-up session. Whilst there is little doubt these modifications could support the generalisation and maintenance of treatment gains [79–82], they would need to be considered in the context of how this may impact translation into clinical services (e.g. funding options, therapist and client availability, accessibility considerations). For example, even within the local geographical context of the present study (NSW, Australia), there are known geographical barriers to accessing neurorehabilitation services, with individuals living in regional and remote locations experiencing greater numbers of unmet needs [83]. The growth of telehealth to support service delivery may support the generalisation, and contextualisation to everyday environments, of programs such as SIFT IT more readily (e.g. [41,84–86]), although this is understandably still an emerging field [87,88]. Developing, and evaluating, innovative digital solutions within social cognitive interventions like the SIFT IT program will likely be both a clinical, and research, priority in the future to support increased, or ongoing, access to services.

Perceived benefits of the SIFT IT program

Feasibility of the SIFT IT program was also considered in the context of whether participants perceived positive benefits from completing the intervention. Most participants reported positive changes to their social cognitive processing skills and described ways in which these changes had a positive impact on their lives. Many talked about how they were more aware of their own, and others’, social cognitive processes, how their own attributional biases that could negatively impact a social interaction; and greater knowledge about how to overcome these biases. Change in metacognitive awareness of self- and other-social cognitive processes was also noted by participants in SIFT IT’s “proof-of-concept” case study [20]. It is possible that this change supported two outcomes: (1) that participants’ motivation to engage

in the SIFT IT program increased (noted by many to evolve from altruistic to personal reasons to attend after commencing the group) [89,90]; and (2) that this then supported their ability to engage in cognitive-behavioural strategies online in social situations to support effortful, conscious, social cognitive processing [91].

Motivation and engagement in rehabilitation are known to enhance treatment outcomes [92,93], thus the experience of finding the program intrinsically (through perceived self-gains) and extrinsically (through peer support) motivating [94], may have then allowed participants to actively engage and learn from therapeutic exercises and activities to support effortful social cognitive processing. This may have then resulted in the changes participants described in becoming more self-aware and, subsequently, becoming more able to question their initial interpretation of a social situation and consider a range of perspectives (both self and other) more flexibly [95]. Such reductions in belief conviction through being able to generate plausible alternative interpretations may imply a degree of cognitive mediation, a key mechanism of change proposed in CBT [96–98]. Even so, many participants also reported that, even if their initial interpretation of a social situation did not change, they were more able to tolerate uncertainty around not knowing others' opinions and accept they, and others, could hold different views. Therapeutic processes associated with acceptance and commitment therapy (ACT), a "third wave" cognitive-behavioural therapy, could support the understanding of such changes: that participants developed the ability to cognitively defuse from their initial interpretation (without necessarily reappraising that thought), they developed greater acceptance of alternative points of view, and they developed an awareness of "self-as-context" [99,100]. These potential therapeutic processes are not necessarily distinct from the purported cognitive mediation mechanism of change described within the CBT framework [101]. Still, considering their applicability to participants' own descriptions of change, further consideration is warranted to learn more about the precise processes impacting both how perspective taking difficulties manifest and, crucially, how remediation efforts can be augmented in future [102,103,104].

Importantly, participants described examples of how they began to respond differently in social situations through participating in the SIFT IT program. These reflections suggest participants were able to translate treatment components into their everyday lives, supporting generalisation to social functioning, a crucial goal for social cognitive therapies [105,106]. Participants' descriptions of pausing before reacting and being able to reduce conflict with others was corroborated by a reduction in self-reported disinhibition, measured quantitatively using questionnaires, outlined in [25]. Generalisation of treatment gains was found in the only other comprehensive, multi-faceted, social cognitive treatment after ABI [24] and reinforces the finding from a transdiagnostic meta-analysis that comprehensive interventions hold more promise in translating gains to social functioning [107].

Perceived negative, or null, impacts of the SIFT IT program

Whilst the experiences described above may have been applicable to most participants, one participant's experience was a notable exception. Danny described a worsening of his mood from increased awareness of his social cognitive difficulties, combined with his perceived lack of ability to enact strategies in the moment. This relationship between greater self-awareness and a worsening of mood was similar to one of the participants in the previous study [20]. These findings reinforce the known mental health risks that can accompany increased awareness of deficits after brain injury [108,109,110], resulting in a potentially catastrophic threat to one's sense of self [111]. Levels of awareness have been theorised to differentiate between metacognitive, or intellectual, awareness and online, or emergent/anticipatory, awareness [112,113]. The worsening of mood experienced by this participant may be related to his improved metacognitive awareness but without a concomitant improvement in online awareness making it difficult for him to enact strategies to perspective take or respond differently.

Two other participants, whilst not experiencing adverse outcomes, reported they perceived no discernible change from participating in the SIFT IT program. This finding was corroborated by the partner of one participant but not the second, who stated she perceived the participant was making fewer misinterpretations that then escalated into arguments with family members. There could be a number of

reasons for these co-existing, contradictory, perceptions: Toglia and Kirk [113] highlighted the dynamic and contextual nature of self-awareness that may have impacted this participant's experiences on the day of the interview, and how these individuals' perceptions would conceivably be influenced by self, other, and contextual factors (e.g. motivation, expectations of change, the research setting) [114,115].

Whilst the approach of the SIFT IT program was purported to support participants to contextualise and translate materials into their everyday social interactions in order to minimise risks to one's mental state [116], biopsychosocial influences (cognitive, psychological, and social) were also noted that could either help or hinder participants' experience of change. Ongoing behavioural dysregulation, social isolation, and motivational factors all appeared to influence the degree to which participants perceived their ability to translate treatment components into their everyday life. It is possible that, for some, further consideration about the suitability of such a program is needed (e.g. to identify those at increased risk of psychological distress prior to group participation) and/or greater flexibility and support may be necessary to facilitate therapeutic change, e.g. through closer monitoring, greater involvement of a family member, as discussed above, or through the provision of additional individual sessions [117].

Acceptability of the research process

The final aim of the study was to explore participants' experiences of participating in the research process. Most participants reflected on their experience of the SIFT IT program when asked about this and were unable to recall specific experiences about the assessments or the randomisation procedure. This may be related to the length of time that had passed since participants first enrolled in the study (with a mean length of five months between Treatment arm participants' Time 1 assessment and the SIFT IT program ending and a mean length of eight months between these two timepoints for Waitlist arm participants) compounded by the impact of possible memory deficits on recall. Even so, overall feedback about the research process was noncommittal and acceptability could be implied through participants' engagement in research tasks including the qualitative interview, their positive descriptions of the SIFT IT program, and their positive descriptions of their participation more broadly.

Limitations

There are several limitations of the present study. First, in drawing conclusions about acceptability of the SIFT IT program, only participants who completed the SIFT IT program were invited to interview, meaning data was based on a single data source. This likely resulted in a biased sample of participants where those who attended most were more likely to have had positive experiences of the program. Even so, the one participant who withdrew from the intervention after Session 7 still provided positive feedback and was not interviewed due to employment opportunities that arose. Employment (either starting or returning to) was a barrier to attendance that arose for several participants. This highlights potential burdens that may impact the intervention's acceptability [28,29]. In addition, one participant was noticeably impacted by fatigue on the day of their interview impacting the comprehensiveness of their feedback and other information sources were not included (e.g. family members, friends, clinicians) that may have had provided alternative insights about participants' responses to the treatment program.

Second, the interviewer in the present study held multiple roles, including as the SIFT IT program's therapist. Participants may have, therefore, felt obliged to respond in a socially desirable way, which may have affected their objectivity in providing feedback. Further, due to the established relationship between interviewer and participant, opportunities for further probing may have been missed during the interview because of the interviewer's assumptions and knowledge about the participant's experiences, previously discussed within the group environment. Despite this, there were also likely benefits to the interviewer having an existing therapeutic relationship with participants: established rapport with the interviewer may have supported participants to share their perspectives more openly, and the interviewer's in-depth knowledge of the program may have allowed for greater probing, thereby supporting the collection of more meaningful data [118,119]. Further, participants were observed to express both positive and negative views about the program, indicating that attempts to minimise response bias were somewhat successful.

Third, whilst a number of coding reliability approaches were incorporated to acknowledge the potential bias of the lead researcher, there were fewer measures of data validation, such as member checking after codes and themes were developed, due to perceived participant burden, to determine the accuracy of interpretations from participants' perspectives [51]. Even though understandings were checked during the interview process itself through active listening, some have argued that the cognitive difficulties of participants with ABI may interfere with this process [120] and that incongruencies between researcher and participant interpretations are to be expected. Thus, engaging in member checking (and subsequently "correcting" interpretations made by the researcher) may privilege one individual's account over the broader data set and context of the analysis [121].

Fourth, participant characteristics may limit the applicability of the program to broader contexts. The sample of participants was solely male and so this reduces the extent to which these experiences, and perceptions about acceptability, can be translated to females also experiencing social cognitive difficulties after ABI. Whilst there may be sex-based differences in the incidence of social cognitive deficits after a brain injury, in which males may be disproportionately affected [6,122,123], females are still thought to be affected by social cognitive changes after ABI [124–126]. Three females were recruited, and eligible to participate in the SIFT IT feasibility RCT, but none commenced the intervention. The factors impacting their willingness or ability to attend would be important to consider from an acceptability perspective, yet this was not possible to gauge from the present study. Further, it is worth noting that the participants who completed the SIFT IT program and were interviewed met the eligibility criteria of having "sufficient cognitive abilities" to participate in the intervention. Non-social cognitive functioning is known to play a role in social cognitive processing (e.g. [127]), thus individuals with greater cognitive impairments may also experience greater social cognitive challenges. Further research is needed to consider how applicable, and/or what adaptations would be needed, for those with greater non-social cognitive impairments to participate in social cognitive interventions like the SIFT IT program. Finally, the study was conducted in the Australian context across metropolitan and regional areas of NSW and it is likely that cultural adaptations would need to be considered before the program could be applied to other cultural, or language, contexts (see [128]).

Conclusions

This study provides the first qualitative analysis of participants' experiences of the SIFT IT program, highlighting the value of including participant perspectives in understanding the feasibility of this novel intervention. Overall, people living with ABI in the community and affected by social cognitive deficits, reported favourable experiences of the SIFT IT program. Aspects of the program participants viewed as important to participants were identified: the group context, the program's focus on social cognitive processes, its non-specific and specific components (e.g. therapeutic alliance, materials, topics, activities), and efforts to support contextualisation were all considered acceptable; and aspects of the program that could be improved were also discussed. Importantly, participants perceived benefits from taking part in the intervention included greater metacognitive awareness and knowledge of social cognition; an improved ability to flexibly perspective take and tolerate uncertain, or different, opinions in others; and greater social behavioural inhibitory control, supporting them to "*stop and think*" before responding in a social situation; positively impacting their broader social functioning and mental state. These findings complement, and add to, the quantitative outcomes described by Cassel et al. [25] and provide further evidence that it is feasible to treat social cognitive deficits after brain injury. Future research will benefit from incorporating these participants' perspectives into further treatment development of the SIFT IT program, and other social cognitive interventions, after ABI. This study provides further evidence that mixed-methods efficacy trials with larger, more diverse, samples are warranted to expand the research base and clinical application of social cognitive interventions in practice.

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Author contributions

CRedit: **A. Cassel:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing; **N. Behn:** Data curation, Formal analysis, Methodology, Supervision, Validation, Visualization, Writing – review & editing; **M. Kelly:** Conceptualization, Formal analysis, Methodology, Resources, Supervision, Validation, Writing – review & editing; **S. McDonald:** Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing.

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