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Learning Disability-Adapted Cognitive Behavioural Therapy for Phobia

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Abstract

Background: Research suggests cognitive-behavioural therapy (CBT) constitutes an effective intervention for phobia. However, literature investigating the effectiveness of CBT for phobia in people with learning disabilities (LDs) is sparse. This case study reports the outcomes of LD-adapted CBT for phobia.

Method: Following examination of the patient's developmental history, assumptions, triggers, cognitions, emotions, physiological symptoms, safety-seeking behaviours and secondary cognitions, behavioural experiments were used to reduce a patient's fear of falling when walking outside. Single case experimental design methodology was used to analyse improvements in the frequency with which the patient walked outside across therapy.

Results: Across therapy, the frequency with which the patient walked outside increased, and her phobia symptoms decreased. By the end of therapy, she regularly walked outside on dry roads, hills, stairs, wet grassy fields, cobbled paths, muddy paths and drains.

Conclusions: This case study provides tentative evidence that LD-adapted CBT attenuates phobias. These results highlight the potential for further research into adapting CBT to meet the unique needs of individuals with LDs.

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1. Introduction

A learning disability (LD) diagnosis is made when an individual scores less than 70 on an intelligence quotient and has exhibited impairments in social and adaptive functioning since childhood (BPS, 2012). Between .7%-10% of people have an LD (Altarac & Saroha, 2007; Padhy et al., 2016; Westerinen et al., 2007). A phobia is an excessive fear, disproportionate to danger, occurring during exposure to or anticipation of a specific object or situation (APA,

2013). Approximately 6.2%-7.4% of people have a phobia (Boyd et al., 1990; Wardenaar et al., 2017); however, research on the prevalence of phobias in people with LDs is absent. Phobia is associated with several problems, including reduced quality of life (Ausín et al., 2020) and increased risk of anxiety, eating and depressive disorders (Ollendick et al., 2010; Sancassiani et al., 2019; Silvestro et al., 2025), underscoring the importance of devising interventions for phobia in people with LDs.

Seligman's (1970) preparedness theory constitutes a prominent theory of phobia (Seligman & Hager, 1972), positing that phobias develop consequential to individuals learning that stimuli (e.g., wasps) are associated with aversive outcomes (e.g., stings; Wolpe, 1968). Phobias can also be acquired vicariously, whereby an individual associates a stimulus with fear through viewing another individual fearful of the stimulus. Furthermore, Seligman (1970) argued humans have evolved to more readily develop phobias towards stimuli that are 'biologically threatening' (e.g., snakes).

Evidence for preparedness theory comes from demonstrations that participants form more persistent associations, resistant to extinction (Rescorla, 2000), between electric shocks and biologically threatening stimuli, such as snakes, than stimuli that are not biologically threatening, such as flowers (Öhman et al., 1974, 1975). Whilst some have failed to replicate these findings (McNally & Foa, 1986), reviews have ascertained reasonable evidence for preparedness theory (McNally, 2016).

Preparedness theory informed the development of interventions for phobia, including cognitive-behavioural therapy (CBT). This model (Kirk & Rouf, 2004) posits fears develop as a consequence of biological preparedness, developmental stage, culture and learning experiences. These fears may lead individuals to assume they have an elevated vulnerability to a stimulus, and associated 'triggers,' such as relevant objects or situations, may make individuals fearful. This may contribute to anxious thoughts about feared stimuli, culminating in hypervigilance towards triggers. Moreover, this model argues individuals overestimate the threat posed by and potential consequences of feared stimuli whilst underestimating their ability to cope. Such beliefs can increase anxiety, anxious cognitions about triggers, physiological arousal and anxious thoughts about the phobia itself (i.e., fear of fear). Ultimately, this can result in safety-seeking behaviours (SSBs), which aim to achieve safety from the stimulus; these include exaggerated expectations of danger, hypervigilance towards physiological arousal, hypervigilance towards fear-relevant

objects and SSBs that negate disconfirmation of the phobia. Collectively, these experiences can culminate in a sense of hopelessness, loss of confidence, low self-esteem and low mood.

Cognitive-behavioural therapy involves supporting individuals to alter their thoughts, feelings, physical sensations, behaviours and attention to attenuate phobias (Hawton et al., 1989). Whilst there are limited guidelines for treating phobia, NICE (2011) guidelines advocate using CBT for anxiety disorders, including phobia. Meta-analytic evidence suggests CBT constitutes an effective intervention for phobia, with large and enduring effect sizes (Hofmann, 2008; Odgers et al., 2022; van Dis et al., 2020; Wechsler et al., 2019; Wolitzky-Taylor et al., 2008). Furthermore, research suggests CBT is effective for various phobias, including phobia of needles (Hiermeier & Mofrad, 2020), vomiting (Riddle-Walker et al., 2016) and heights (Faizah et al., 2024).

Indeed, NICE (2016) guidelines advise using CBT for phobia for people with LDs, adapted for the patient's preferences, level of understanding and needs. Despite abundant literature on the general population, research investigating the effectiveness of CBT for phobia for people with LDs is sparse (Tangarife & Martínez, 2024). Some case studies have ascertained evidence that CBT helps people with LDs with phobias (Jennett & Hagopian, 2008), including phobias of animals (Burton et al., 2017; Cowdrey & Walz, 2015) and using trains (Korh & Giuliani, 2016). However, no randomised controlled trials have examined the efficacy of LD-adapted CBT for phobia. Moreover, research identifying adaptations to CBT for phobia in LD populations is absent. Given the paucity of research, this case study reports the outcomes of LD-adapted CBT for phobia.

2. Assessment

2.1 Referral History

Juliet was a 22-year-old, heterosexual, white British, unemployed woman from a working-class family in southern England with a diagnosis of Down's Syndrome and an LD. Reports suggested Juliet communicated through simple verbal language but that visual aids help expressive and receptive communication. Previously, she received support from the occupational therapy (OT) team to reduce her risk of falling. They provided Juliet with a Zimmer frame, despite her not needing one for physical reasons, because it reduced her fear of falling. Despite OT support to reduce her risk of falling, Juliet was afraid of walking outside, which prompted a referral to the psychology team for support with walking outside.

2.2 Initial Assessment

The assessment consisted of reviewing notes and clinical interviews. Juliet disclosed she broke her ankle seven years prior to the assessment because she fell in a drain. A two-year physical recovery followed, during which she required multiple surgical procedures. Since this incident, Juliet felt "extremely anxious" about walking outside, particularly on uneven surfaces. However, she was not afraid of walking indoors, which her mother attributed to the even surfaces and structures (e.g., rails) she could use to support herself if feeling unbalanced. Due to the longevity of her fear and avoidance of stimuli related to falling, Juliet was assessed for post-traumatic stress disorder through interview questions and psychometrics. However, as she did not experience intrusions, disruptions in her memory of falling and/or persistent negative emotional states (APA, 2013), her problems were considered more consistent with phobia. Learning disability-adaptations to the assessment are described under 'Intervention.'

2.3 Goals

The importance of making goals specific, measurable, achievable, realistic and time-limited was emphasised (Westbrook et al., 2011). With support from her mother, Juliet set the goal of walking outside once every day by the end of therapy. She appeared highly motivated as she wanted to walk outside at her sister's upcoming wedding.

2.4 Formulation

Kirk & Rouf's (2004) CBT model was used to formulate Juliet's phobia. Juliet's experience of breaking her ankle may have led to her developing an association between walking outside, particularly on uneven surfaces, and injury (Rescorla & Wagner, 1972). Humans may have a biological preparedness to associate injury with stimuli (e.g., drains) as the salience of pain is high (Mackintosh, 1975). Also, Juliet often thought about the incident where she broke her ankle, which may have strengthened her association between walking outside and injury (Powers et al., 2017). Furthermore, research suggests people with LDs experience memory challenges and update previously formed associations relatively slowly (Welsh et al., 2023), perhaps indicating Juliet found it challenging to learn walking outside no longer indicated injury. Moreover, as British society infantilises people with LDs (Guilfoyle, 2015), Juliet may have internalised narratives that she is less competent than people without LDs, culminating in her underestimating her ability to cope with walking outside. Finally, Juliet's father died when she was 10 and the uncontrollable nature of death may have left her with low perceived control over her life.

These developmental experiences and predispositions appeared to leave Juliet with the assumption that she was highly vulnerable to falling when walking outside. The salience of these

assumptions appeared to increase when Juliet was exposed to triggers, such as thinking about walking outside, anticipating walking outside or walking outside. Also, Juliet experienced anxious cognitions, consisting of imaginal memories of immediately after she had broken her ankle, and described "worrying about falling again." These anxious cognitions may have culminated in hypervigilance towards triggers, ultimately leading Juliet to overestimate the threat posed by and the consequences of walking outside, whilst underestimating her ability to cope with walking outside. Also, as LDs are associated with slower processing speeds (Erostarbe-Pérez et al., 2022), Juliet may have felt unable to cope with becoming unbalanced. Indeed, Juliet voiced expecting to "fall and break [her] ankle" when walking outside and anticipated being "unable to cope" with the consequences of falling.

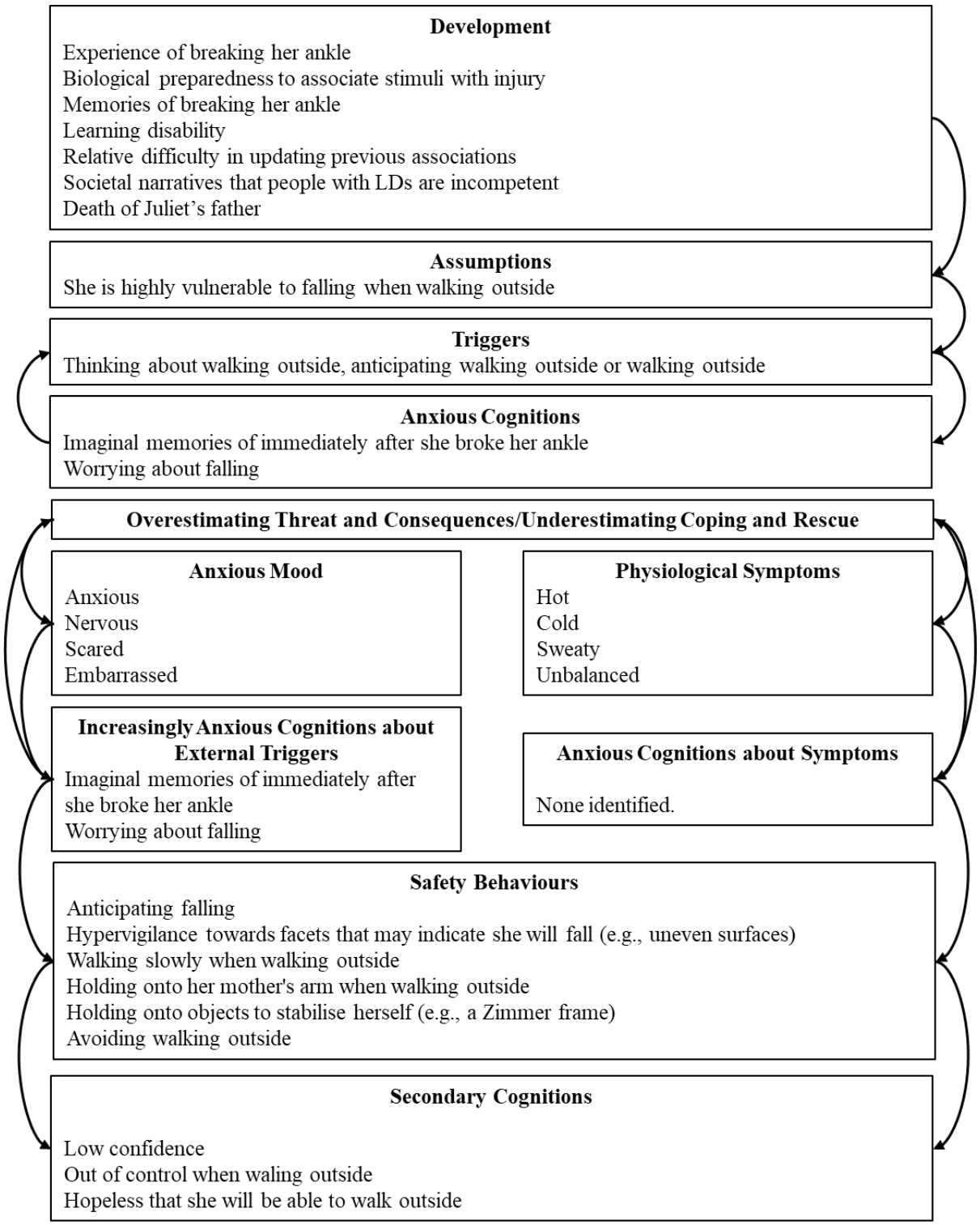
When exposed to triggers, Juliet felt "anxious, nervous, scared and embarrassed." Also, she experienced several physiological symptoms, including feeling hot, cold, sweaty and unbalanced. Research suggests individuals with phobia may have anxious cognitions about physiological symptoms, such as fearing being restricted by phobia of walking outside, and may develop SSBs related to such fears (Kirk & Rouf, 2004); however, Juliet indicated she did not experience such cognitions or SSBs. Nevertheless, these emotions and physiological sensations appeared to culminate in increasingly anxious cognitions, such as worrying about falling and experiencing mental images of falling, which appeared to perpetuate her overestimation of the threat posed by and the consequences of walking outside and her underestimation of her ability to cope. Consequently, Juliet engaged in several SSBs, including anticipating falling, hypervigilance towards facets that may indicate she will fall (e.g., uneven surfaces), walking slowly, holding onto her mother's arm and stabilising objects (e.g., a Zimmer frame) when walking outside and avoiding walking outside. Also, as Juliet's mother was very worried about Juliet falling, she often discouraged her from walking outside and offered Juliet her arm when walking, which prevented Juliet from having successful instances of walking outside unaided.

Ultimately, these experiences appeared to leave Juliet feeling low in confidence and out of control when walking outside, hopeless she will be able to walk outside. For example, Juliet said she "could never walk outside for [her] sister's wedding." A visual depiction of the formulation is displayed in Figure 1.

Importantly, Juliet had several protective factors (Greenberger & Padesky, 1995), including a supportive family and several indoor hobbies, such as watching TV, karaoke, dancing, seeing friends, yoga, swimming, attending groups with other people with LDs and playing with her pets.

Figure 1

Formulation (Kirk & Rouf, 2004)



2.5 Outcome Measures

The Severity Measure for Specific Phobia (SMSP) was administered in the assessment and ending sessions (Craske et al., 2013). Patients indicate the extent to which they experienced 10 symptoms of phobia in the preceding week on a five-point Likert scale; higher scores are

indicative of more severe phobias. Unfortunately, research has not identified 'reliable change thresholds' or severity categories (Craske et al., 2013), limiting one's ability to determine whether changes in scores are clinically meaningful. Given its linguistic complexity, Juliet's mother completed it on Juliet's behalf. Evidence for the validity of the SMSP comes from demonstrations that scores correlate with other validated measures of phobia and reports that those with a phobia score higher than those without a phobia (MacLeod et al., 2022; Ovanessian et al., 2019). Furthermore, research indicates the SMSP entails high internal consistency, with a Cronbach's (1951) alpha of .93 (MacLeod et al., 2022; Ovanessian et al., 2019), and that the items load significantly onto a factor (Kaloeti et al., 2021), suggesting it represents a reliable measure of phobia.

As the SMSP has not been adapted for LD populations, an idiographic measure was collaboratively created to measure Juliet's progression towards her goal (Morley, 2017). With the support of her mother, Juliet retrospectively reported the frequency with which she had been on a walk, defined as a substantial walk for an extended period, in the week preceding each session; this is subsequently referred to as 'walk frequency.' For example, walking in town would be considered a walk, but a brief excursion to the street would not. Walk frequency was operationalised unambiguously in attempt to standardise the idiographic measure. The criterion validity of this measure is substantiated by its relevance to Juliet's difficulties and goals. Furthermore, the stability of this measure during the baseline phase substantiates its test-retest reliability. Of note, measurement insensitivity is unlikely to have underpinned baseline stability, as walk frequency changed following the introduction of the intervention.

During the assessment, Juliet scored 28/40 on the SMSP and was not going on any substantial walks. Collectively, these measures indicate Juliet had a relatively severe phobia of walking outside.

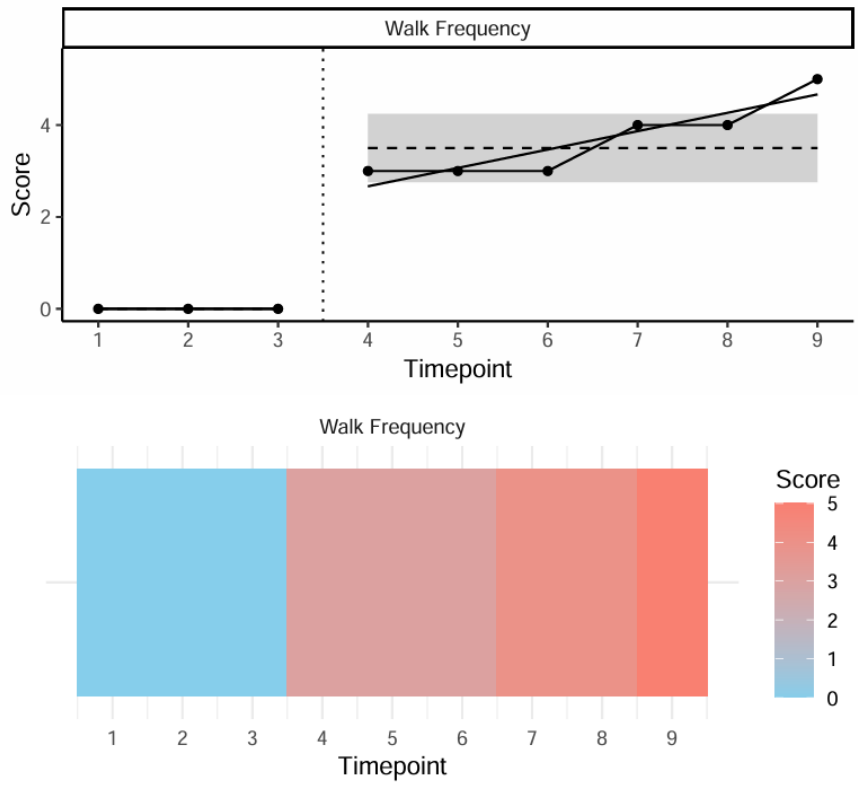
2.6 Design

This single case experimental design (SCED) adopted an AB design, with a 'baseline' and 'intervention' phase. Walk frequency estimates were obtained in every session. The SMSP was not administered in every session because completing the measure took a long time, which would have significantly reduced the time available for therapy. During the baseline, walk frequency measures were collected for three weeks, spanning psychoeducation and formulation sessions; these sessions were not included in the intervention phase because they were not intended to change Juliet's thoughts, feelings or behaviours. During the intervention, walk frequency estimates were collected for five weeks.

The frequency with which Juliet went on walks in the week prior to each session is detailed in Figure 2. Visual inspection of Figure 2 suggests that Juliet's walk frequency was stable during baseline, as she was not going on any 'walks.' This suggests regression to the mean, measurement variance, spontaneous remission or changes in measurement sensitivity with repeated use and/or over time was unlikely to account for sizeable changes in walk frequency during the intervention phase (Myles & Jones, 2024; Morley, 2017). Instead, sizeable changes in walk frequency during the intervention phase were more likely the consequence of therapy. To identify relevant confounds, extra-therapy events (e.g., falls) were assessed each session.

Figure 2

Walk Frequency



2.7 Analysis

Visual inspection was used to determine whether Juliet exhibited a change in SMSP scores and walk frequency across therapy (Morley, 2017). As visual inspection has low inter-rater reliability (Ximenes et al., 2009), Ruscio's (2008) 'A,' a non-parametric statistical test determining the probability that a randomly selected data point in the intervention phase is greater than the baseline phase, was used to determine whether there was a statistically significant ($p < .05$) change in walk frequency between the baseline and intervention phases (Hussey, 2019).

2.8 Hypotheses

Consistent with her goals, it was hypothesised that Juliet's walk frequency would increase to a stable, acceptable point and that her SMSP scores would reduce by an amount acceptable to Juliet.

3. Intervention

Consistent with NICE (2011, 2016) guidelines, Juliet received eight sessions of adapted CBT, following Craske et al.'s (1997) protocol.

3.1 Learning Disability Adaptations

The clinician occasionally struggled to understand Juliet's expressive language. In line with NICE (2016) guidelines, CBT was adapted for Juliet's LD and her communication style. First, as Juliet struggled to articulate her feelings, she was provided with visual aids (photos of facial expressions) from which she could select feelings (Stans et al., 2019). Relatedly, when struggling to answer questions, she was provided with options from which she could select a response. Second, Juliet's language was used to describe the problem, as research suggests that patients' language possesses idiosyncratic meaning (Cronen et al., 1989); using her language intended to encapsulate the full meaning of the problem for Juliet. Third, where Juliet struggled to answer questions, her mother's perspective was sought, as she was present in all sessions. Where her mother provided an answer, confirmation as to whether Juliet agreed was always sought (Penn, 1982), with an awareness of acquiescence. Fourth, communication was made simple, clear, concise, concrete and appropriate to Juliet's cognitive and linguistic abilities, with regular repetition (Bahr & Silliman, 2015). Where clinicians struggled to communicate questions in a manner Juliet understood, her mother supported by rephrasing questions. Also, Juliet was regularly asked to explain her understanding of a discussion, to ensure she understood. Fifth, when setting homework, Juliet's mother was enlisted to support her to remember and complete tasks (Jurinec & Schienle, 2022). Finally, sessions were conducted at a frequency and pace that Juliet indicated was stimulating but not too challenging.

Session 1: Psychoeducation

The CBT model was introduced to Juliet, emphasising its time-limited and collaborative nature (Westbrook et al., 2011). Thoughts, emotions, physical sensations and behaviours were defined. An example was used to aid comprehension, in which Socratic questioning (Paul & Elder, 2019) was used to elicit Juliet's expectations of the thoughts, emotions, physical sensations and

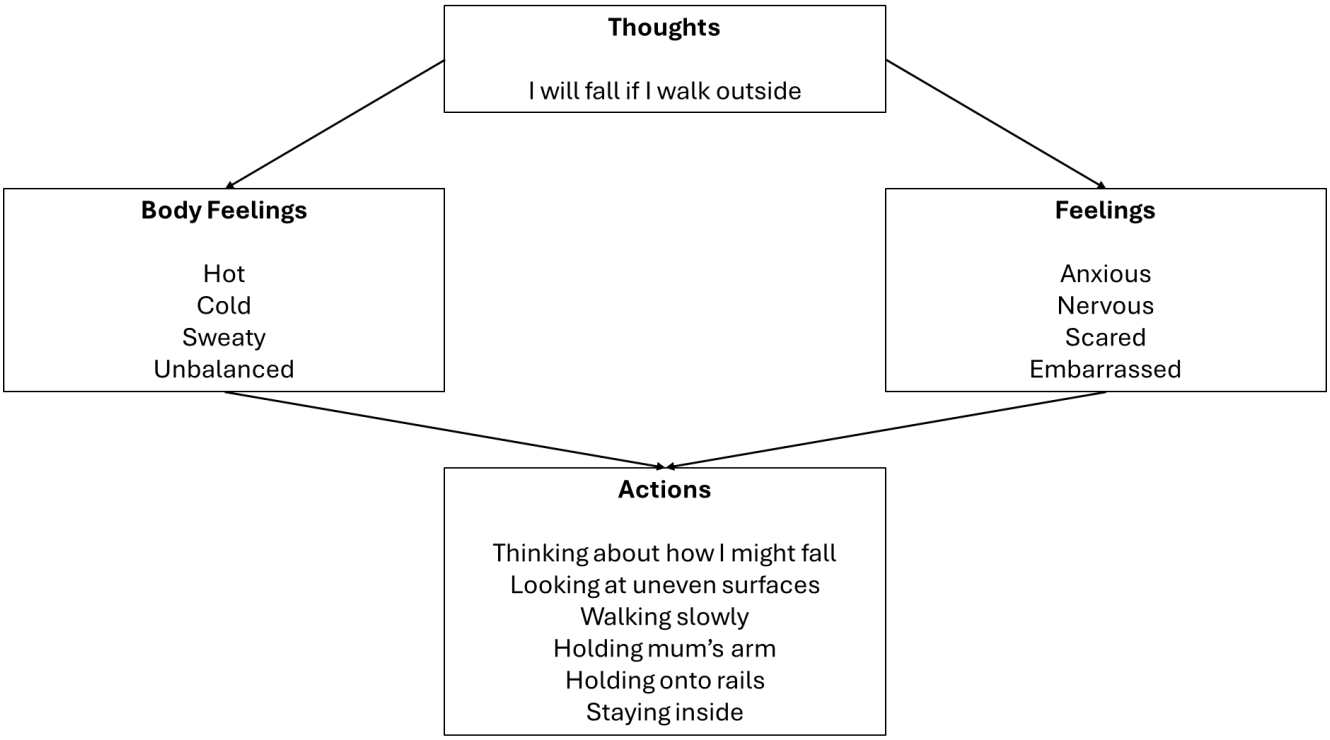
behaviours of both people with and without a phobia of walking when walking across an office; using personally-relevant fears endeavoured to aid comprehension.

Session 2-3: Formulation

Socratic questioning (Paul & Elder, 2019) was used to elicit Juliet's thoughts, emotions, physical sensations and behaviours when walking outside, as this questioning style empowers patients to define problems (Myles et al., 2020, 2021; Myles & Merlo, 2022). Where Juliet shared her thoughts, downward arrowing was used to elucidate core beliefs (Westbrook et al., 2011). To explore moderators, Juliet was asked about times where she felt more and less afraid when walking. Simplified formulations were collaboratively created with Juliet (see Figure 3).

Figure 3.

Simplified Formulation

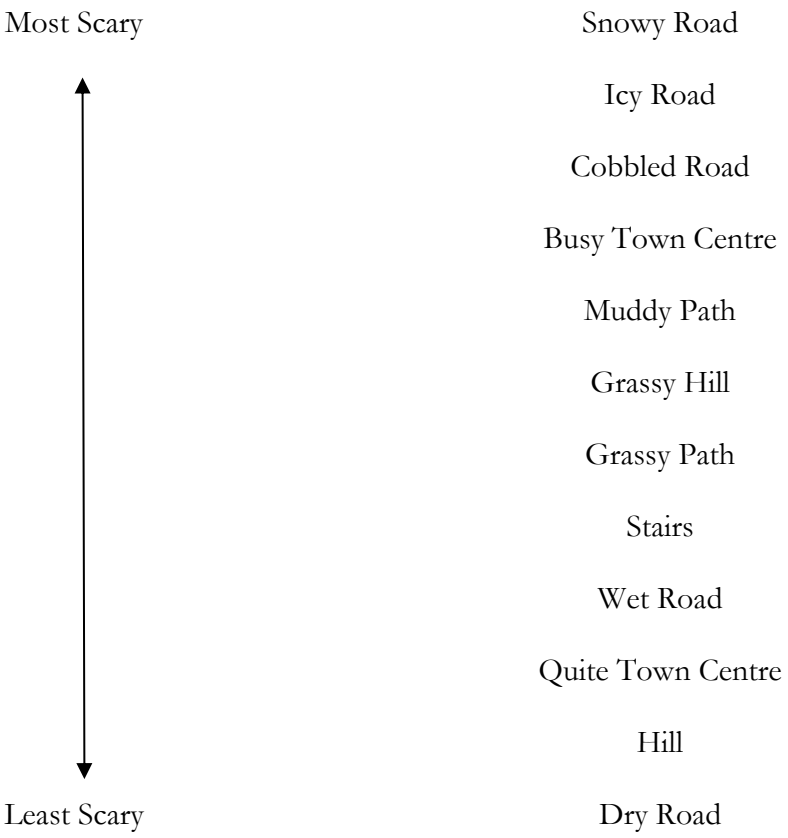


Session 4: Exposure Hierarchy

A hierarchy of feared stimuli was collaboratively devised with Juliet and her mother. Juliet was presented with pictures of different terrains and asked to rank the terrains from most to least scary (see Figure 4).

Figure 4

Exposure Hierarchy



Sessions 5-7: Behavioural Experiments

Behavioural experiments (BEs) examined the validity of Juliet's belief that she would fall when walking outside (Westbrook et al., 2011). When asked about alternative possibilities to falling, Juliet acknowledged she may not fall. When asked how to test whether walking outside will lead to falling, Juliet suggested walking outside. Juliet was supported to walk on various terrains within BEs, starting with the 'least scary' terrain in her hierarchy and moving to more scary terrains when she felt comfortable. Juliet voiced feeling anxious during BEs, so the clinician avoided pressuring her into walking on terrain that felt "too challenging" to maintain Juliet's sense of autonomy. During BEs, several SSBs were identified, including holding onto her mother's arm, walking slower and focusing on the ground; Juliet was encouraged to stop using these SSBs. Juliet was prompted to reflect on the implications each BE on her beliefs that she would fall when walking outside and could not cope with walking outside. She struggled to rate the extent to which she believed she would fall, so was asked to rate her fear during each BE on visual analogue scale of 1-10, where 10 was 'extremely scared' and 1 was 'not scared at all.'

Her mother also voiced worrying that Juliet would fall during BEs. Therefore, her mother was prompted to reflect on the implications of BEs for Juliet's competence in walking outside, to implicitly challenge beliefs that Juliet will injure herself when walking outside. Following reflection, new BEs were devised to help Juliet examine the extent of her competence in walking outside. Homework was collaboratively developed after each session, consisting of walking more frequently and on increasingly challenging terrain.

Session 8: Ending Therapy

In the final session, a certificate and an easy-read letter detailing the assessment, formulation, intervention and outcome was shared with Juliet (see Appendix 4). Also, strategies for continuing to increase walk frequency and attenuate phobia symptoms were discussed, such as continuing BEs.

3.1 Feedback

Juliet and her mother were asked for feedback and improvement suggestions on the previous session at the beginning of each session and on the current session at the end of each session. These suggestions, such as greater use of visual aids, were integrated into therapy.

4. Outcome

By session eight, Juliet regularly walked outside on dry roads, hills, stairs, wet grassy fields, cobbled paths, muddy paths and drains. Also, Juliet voiced being "excited" to walk, which her mother said was "a big change because she previously felt afraid." Furthermore, Juliet's mother noticed Juliet was using fewer SSBs, including holding onto her mother's arm less and reduced hypervigilance towards facets that may indicate she will fall.

Juliet's walk frequency and corresponding trend lines across sessions are shown in Figure 2. Her walk frequency was stable during baseline and showed a statistically significant increase to a stable score of at least four after CBT, $A = .94$, $p < .001$. Moreover, Juliet's SMSP scores before and after therapy are shown in Figure 5. Her SMSP scores reduced across therapy, culminating in minimal symptoms of phobia post-therapy. Finally, Juliet's fear ratings whilst doing BEs are shown in Figure 6; her fear ratings declined across BEs. Juliet said she was "pleased and proud" of these changes. No significant extra-therapy events were recorded during this work.

Figure 5

Severity Measure for Specific Phobia Scores

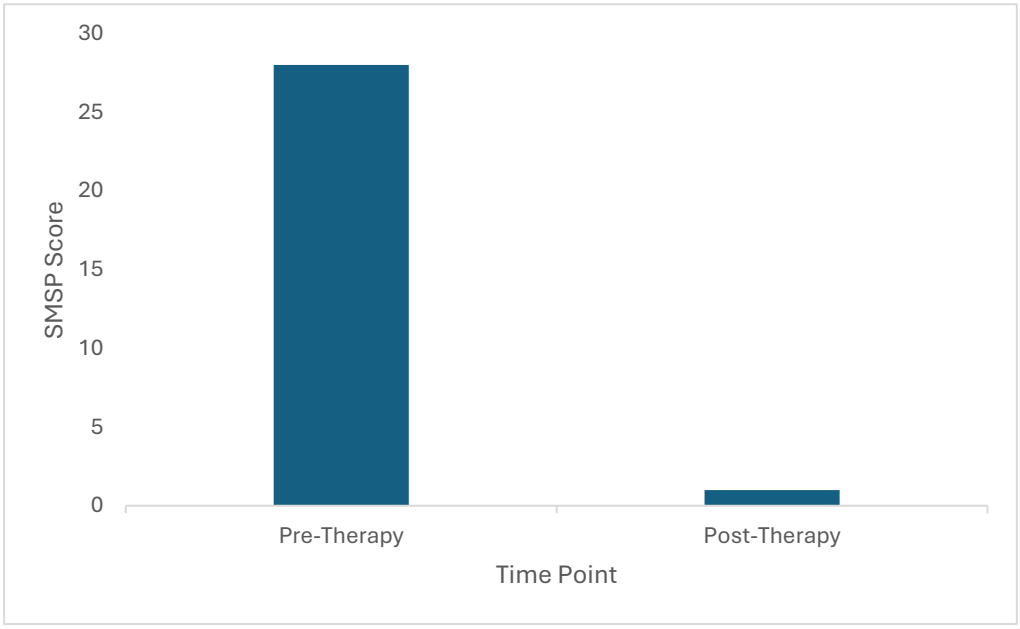
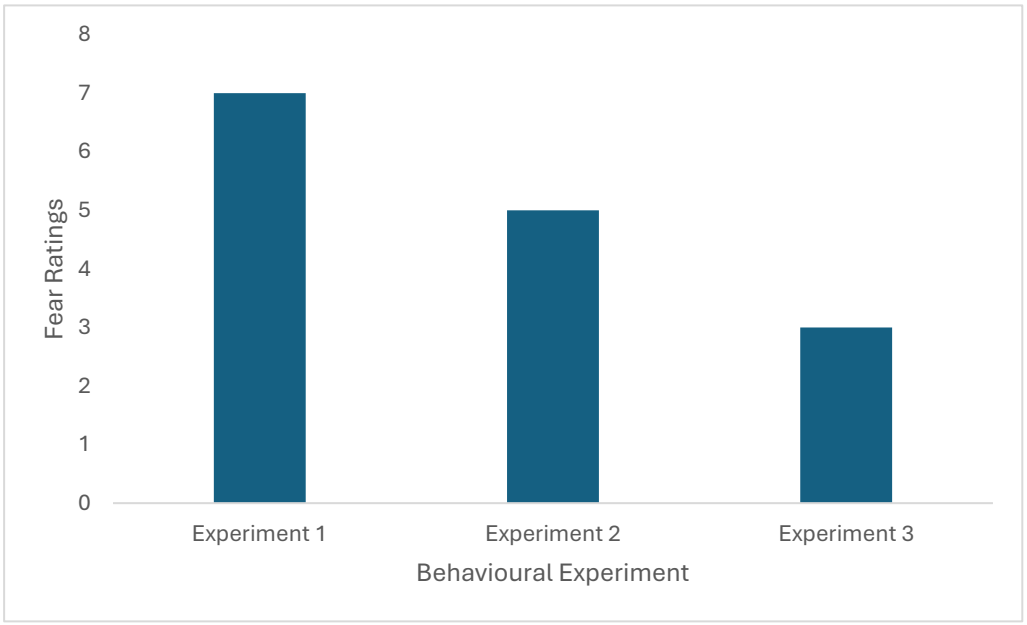


Figure 6

Fear During Behavioural Experiments



4. Discussion

This case study reports the outcomes of LD-adapted CBT for phobia. The results indicate that LD-adapted CBT was effective in reducing phobia of walking outside. Appendix 5 details reflections.

Consistent with her goals, Juliet exhibited a reduction in SMSP scores and an increase in walk frequency that she deemed acceptable by the end of therapy. Whilst her goal of walking outside daily was not achieved, Juliet "was satisfied" with her increase in walk frequency. These results are consistent with previous demonstrations that CBT constitutes an effective intervention for phobia in the general population (Faizah et al., 2024; Hiermeier & Mofrad, 2020; Hofmann, 2008; Odgers et al., 2022; Riddle-Walker et al., 2016; van Dis et al., 2020; Wechsler et al., 2019; Wolitzky-Taylor et al., 2008) and people with LDs (Burton et al., 2017; Cowdrey & Walz, 2015; Jennett & Hagopian, 2008; Korh & Giuliani, 2016). The efficacy of CBT for phobia may have been bolstered by the LD-specific adaptations, including the use of visual aids, communication adaptations, enlisting carers to support with communication and homework, confirming the patient's understanding of conversations and conducting sessions at the patient's pace. However, in the absence of large-scale studies investigating the influence of these adaptations, such propositions are merely speculative.

Importantly, changes in walk frequency are unlikely to be due to measurement error or changes in the sensitivity of the idiographic measure, as scores were stable both at baseline and post-therapy, showing significant changes only after the introduction of the intervention (Myles & Jones, 2024). Nevertheless, other factors may have underpinned changes in walk frequency and SMSP scores. For example, Juliet's mother appeared highly enthusiastic and may have motivated Juliet to walk between sessions, consequently increasing walk frequency. Indeed, this is consistent with the increase in walk frequency prior to BEs. However, such explanations are undermined by the longevity of Juliet's phobia.

These findings also indirectly substantiate theories of phobia. For example, demonstrating that removing SSBs, such as Juliet's avoidance of walking outside, hypervigilance towards facets indicating she will fall and holding of her mother's arm, was associated with attenuations in her phobia substantiates the proposition that SSBs perpetuate phobias (Kirk & Rouf, 2004). However, such observations are consistent with several theories and therefore fail to prove that preparedness theory and cognitive-behavioural conceptualisations of phobias are correct (Myles, 2021; Myles & Johnson, 2023).

Despite the apparent efficacy of this intervention, alternative approaches may have been useful. For example, it may have been helpful to conduct a BE in which Juliet walked at the site of her injury; time constraints prevented this. Also, as Juliet exhibited hypervigilance towards triggers, mindfulness may have attenuated this SSB by orienting her attention away from triggers to stimuli indicating safety and competence when walking (Bang et al., 2021).

5. Limitations and Future Research

The validity and reliability of the SMSP was compromised as it was not standardised for people with LDs or for a carer to respond on a patient's behalf. Relatedly, Juliet's understanding of 'walk frequency' may have changed across sessions, confounding the results; however, this seems unlikely as she was regularly reminded of the definition. Also, taking other measures, such as ratings of Juliet's confidence when walking outside, use of SSBs and belief in secondary cognitions, would have garnered a more holistic overview of specific symptom changes. Future research should replicate this study using holistic, validated and standardised LD-specific phobia measures.

Whilst SCED methodology offers insight into the potential causes of changes walk frequency, due to the establishment of a stable baseline, the causal basis of increments in walk frequency remains elusive. As the intervention phase onset was not systematically manipulated, extraneous facets occurring immediately before increments in walk frequency may have underpinned progress, such as increments in Juliet's determination to walk outside due to her sister's upcoming wedding or demand characteristics. Large-scale, controlled replications of this study would help determine whether CBT is an effective and generalisable intervention for phobia for people with LDs.

6. Conclusion

In conclusion, this case study highlights the potential of LD-adapted CBT as an effective intervention for phobia, specifically in reducing the fear of walking outside. While the intervention was tailored to Juliet's unique needs and demonstrated promising results, the absence of large-scale studies limits definitive conclusions regarding the generalisability of these findings. Future research should explore the broader applicability of LD-specific CBT adaptations to ensure that individuals with LDs receive evidence-based support for phobias.

Conflict of Interest Statement

The author declares that the research was conducted in the absence of any potential conflict of interest.

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