Mental Imagery and its Characteristics

in Children with Specific Phobia

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Abstract

Background and objectives: Specific phobias are among the most common mental disorders. Mental imagery (MI) has been argued to play a role in the maintenance of phobic fear, and is understudied in persons with specific phobias, especially in children. The present study aimed to explore the characteristics of MI in children and whether phobic severity related positively with the vividness, realness, and awfulness of MI.

Methods: The study included children with specific phobias ($N = 16$), averaging 10.5 years of age. The Imagery Interview for Specific Phobia in Youth assessed MI characteristics and phobic severity was determined using the Anxiety Disorders Schedule Child and Parent (ADIS-C/P).

Results: Phobia severity was moderately high, with dog and injection phobia subtypes being the most prevalent. Out of 16 children, 11 (69%) reported recurring negative MI relevant to their phobia. Notably, most participants indicated that their MI resembled flashbacks and flashforwards rather than fantasies or learning from negative information or modelling (e.g. by an anxious parent). The predominant sensory modality linked to MI was bodily perception. Spearman's rank-order correlations between phobia severity and MI characteristics vividness, realness, and awfulness were positive, weak to moderate, yet nonsignificant.

Conclusion: Mental imagery occurs in most children with specific phobia. No significant relationship was found between MI characteristics and phobic interference, contradicting the generally assumed causal relationship between MI and anxiety. Replication with a larger sample is recommended.

Keywords : mental imagery, specific phobia, sensory modalities

Samenvatting

Achtergrond: De specifieke fobie is één van de meest voorkomende mentale stoornissen. In de literatuur wordt verondersteld dat mental imagery (MI) een rol speelt bij de instandhouding van fobische angst. MI is weinig onderzocht bij personen met een specifieke fobie, vooral bij kinderen. Doelen van de huidige studie waren om de karakteristieken van MI exploratief te onderzoeken en te toetsen of er een positief verband bestaat tussen fobische ernst en levendigheid, echtheid en afschuwelijkheid van MI.

Methoden: De steekproef bestond uit 16 kinderen met een specifieke fobie, met een gemiddelde leeftijd van 10,5 jaar. Het Imagery Interview for Specific Phobia in Youth mat MI karakteristieken en fobische ernst is gemeten met het Anxiety Disorders Schedule Child and Parent (ADIS-C/P).

Resultaten: Fobische ernst was bovengemiddeld hoog en subtypes hondenfobie en bloed-injectie-letsel fobie kwamen het vaakst voor. Van de 16 kinderen, rapporteerden 11 (69%) terugkerende negatieve MI met betrekking tot hun fobie. Opvallend was dat de meeste kinderen aangeven dat hun MI flashbacks en flashforwards representeert, en niet zozeer fantasieën of het leren van negatieve informatie of modelleren (bijvoorbeeld bij een angstige ouder). De meest prominente sensorische modaliteit gelinkt aan MI was lichamelijke waarneming. Spearmans rangcorrelatiecoëfficiënten tussen fobische ernst en levendigheid, echtheid en afschuwelijkheid waren positief, zwak tot gemiddeld maar niet-significant.

Conclusie: Mental imagery komt voor bij de meeste kinderen met een specifieke fobie. Er is geen statistisch significante relatie gevonden tussen fobische interferentie en levendigheid, echtheid en afschuwelijkheid wat conflicteert met het algemeen veronderstelde causale verband tussen MI en angst. Replicatie met een grotere steekproef is geadviseerd.

Trefwoorden: mental imagery, specifieke fobie, sensorische modaliteiten

Mental Imagery and its Characteristics in

Children with Specific Phobia

Specific phobias are among the most common mental disorders with an estimated cross-national lifetime prevalence of 7.4%, with age of onset being young at approximately eight years (Wardenaar et al., 2017). A specific phobia is a type of anxiety disorder with an intense, persistent fear of an object, situation or activity including different subtypes (Diagnostic and Statistical Manual of Mental Disorders (DSM); American Psychiatric Association, 2013). These subtypes range from animal (e.g., spiders, dogs), blood-injection-injury (e.g., needles, medical procedures), natural environment (e.g., heights, lightning storms), situational (e.g., elevators, airplanes) to other (e.g., vomiting, costumed characters). Most individuals have more than one subtype, and prevalence rates decrease with age and are higher in females. Different pathways have been described for the development of specific phobias. For instance, traumatic experiences can result in a phobia (classical conditioning), observing others demonstrate fearful behaviour (modelling), or by being told distressing or fearful information about stimuli, i.e., provision of negative information (Davis, Ollendick, & Öst, 2019). Cognitive, physiological, and behavioural responses are evident in phobic reactions. A child may think of being scared (cognitive), heart rate may increase (physiological), and they may suck thumbs or show avoidance (behavioural).

Mental imagery (MI) has been argued to play a role in the maintenance of phobic fear. MI can be defined as 'seeing with the mind's eye' or 'hearing with the mind's ear' and contemporary cognitive science defines it as internal representations of stimuli that give rise to perception, without appropriate stimuli present while recruiting similar neural circuitry and cognitive processes (Jankowska & Karwowski, 2022; Wraga & Kosslyn, 2006; Holmes & Agren, 2020). MI can also help solve problems by trying to predict the outcome of actions. For example, one may imagine giving an important presentation to prepare for the actual one. By

doing so, one can mentally "pre-experience" a future event (Holmes, Geddes, Colom & Goodwin, 2008). In addition, people use positive mental imagery to experience positive emotions, for example by imagining a glory moment (Schwarz et al., 2020).

Conversely, MI is associated with negative emotions when imagining negative scenes. When people think about unpleasant events, MI gives rise to distress and discomfort (Schwarz et al., 2020). By using similar neural and cognitive processes, MI may be perceived as realistic, potentially evoking fearful reactions (fight, freeze and flight). A typical example of negative MI is the intrusive flashback that is central in post-traumatic stress disorder (PTSD; Holmes et al., 2008). Mixed emotions can also occur, such as when patients with depression imagine their suicide; both comfort and distress can be experienced in such a case (Schwarz et al., 2020). MI has been associated with negative emotions and it is argued that MI may maintain mood and behavioural states.

In line with Clark's original model of panic (Clark, 1986), anxiety increases through bodily sensations and pathological threat appraisal. However, imagery now strengthens both anxiety and threat appraisal, possibly functioning as an amplifier of emotional states (Holmes et al., 2008). Subsequently, MI may rapidly activate negative emotions and amplify anxiety and threat beliefs even further. By acting upon MI with fearful responses (i.e., fight, flight and freeze), avoidance causes short-term alleviation of distress further increasing the likelihood of avoidant responses and possibly provoking negative MI even more often. People are more likely to act on simulations (i.e., MI) in their imagination than those conceptualised verbally, which might further increase the likelihood of fearful responses following negative MI (Schacter et al., 2007). Empirical studies suggest amplification of anxiety and mania through MI in bipolar disorder (Holmes et al., 2008). MI as an amplifier of emotional states may be true for specific phobia as well. To summarise, negative MI could amplify emotional states and

reinforce a fearful maintenance loop through avoidance, which through short-term relief reinforces the effect of the initial MI.

Most research investigating MI has been done with adults; in one recent meta-review the authors (Schwarz et al., 2020) found only 14 studies on MI in children (of which six used a clinical sample). None of these studies investigated MI in specific phobias. Although none of these studies investigated MI in specific phobias, negative recurrent self-images were found to be more frequent and vivid in adolescents with social anxiety disorder and major depressive disorder (Schreiber & Steil, 2013; Kuykens & Howell, 2006). Social anxiety was associated with negative interpretations in a study instructing children with either negative or positive self-imagery (Vassilopoulos et al., 2009).

MI can vary in their characteristics and multiple characteristics have already been described. First, MI can occur across sensory modalities such as the visual, bodily, skin, auditory, gustatory and olfactory modalities albeit that most research has been done investigating visual perceptions (Singh, 2017). For instance, in individuals with spider phobia visual imagery is most frequently reported (Pratt et al., 2004) compared to other modalities. These individuals may imagine impossibly large spiders (with teeth). Second, the representation of the mental image may reflect autobiographical flashbacks, flashforwards (related to catastrophic images of negative outcomes), or fantasies. These are exclusively visual. MI may also reflect learning, as it is proposed to form through classical conditioning, modelling or provision of negative information (LeBeau et al., 2010). For instance, in patients with severe health anxiety participants reported intrusive images, often relating to memories (Muse et al., 2010). Third, MI characteristics such as vividness, realness, and awfulness. Vividness is the most frequently measured quality of MI. It is often defined as the degree of similarity between a perceived experience and an actual experience (Jankowska & Karwowski, 2022). Vividness affects the intensity of emotions following negative MI for several anxiety

disorders: PTSD, obsessive-compulsive disorder (OCD), social anxiety disorder (SAD), agoraphobia, body dysmorphic disorders and depression (Schwarz et al., 2020). Realness corresponds to how detailed and realistic the image is. Awfulness encompasses how distressing or disturbing the image is. Fourth, observer and field perspective. MI in SAD and depression is more frequently seen through an observer perspective, likely reducing uncomfortable emotions through cognitive avoidance, whereas field perspective is more common in patients with OCD (Schwarz et al., 2020). The observer perspective may be specific to MI involving social-evaluative worries, which are generally absent in specific phobias. Moreover, when comparing adults with social phobia and blood-injection-injury the results attest to this assumption: the first group reports an observer perspective whereas the latter reports a field perspective (Wells & Papageorgiou, 1999). A field perspective may be more common in children with specific phobia as well, possibly experienced as more distressing because of the smaller perceived distance between the viewer and the phobic object.

As studies focusing on MI in children are scarce it could be worthwhile to investigate MI in this population. Children have less control over their images than adults due to their cognitive development (Schwarz et al., 2020). In turn, this may increase the frequency and intensity of negative MI and emotions in children, subsequently resulting in cognitive defencelessness. The scarcity of studies and differences in the representation of MI in children compared to adults, warrant investigating MI and its characteristics in children with specific phobias. Moreover, because many mental disorders in adults can be traced back to certain childhood events, MI in children could be an important factor in the development of mental disorders (Caspi et al., 1996) and may be a worthwhile target for intervention and prevention.

In the current study, the characteristics of MI in children with specific phobias will be described. The first research question is 'What type of mental images and respective characteristics do children with a specific phobia report?'. The second question is 'Do children

report MI relevant to classical conditioning, provision of negative information, and fantasies?' Finally, this study aims to answer the question 'Are MI characteristics vividness, realness and awfulness associated with anxiety and avoidance?'. MI characteristics may enhance the vicious cycle of anxiety and avoidance, hence a positive relationship between MI and anxiety and avoidance is expected. Exploratorily, observer/field perspective and sensory modalities were investigated. Answering these questions could give insight in the potential role of MI in the maintenance of anxiety in an understudied population, which could prove useful to address during treatment.

Methods

The current study is embedded in a larger multicentre, randomised and clinical pragmatic trial, namely the Kids Beat Anxiety (KiBA III) study of head researcher Dr. Anke Klein at Leiden University. In this ongoing study that will be completed in 2024, 174 children receive treatment for a specific phobia and multiple measurements take place pre- and posttreatment. The current study focused on different research questions while using a small subset of the pre-treatment KiBA III data.

Participants

The current sample included 16 children aged between 8 and 14 years with a mean age of 10.5 years old. More than half of the participants were females (62.5%). Participants received treatment for a specific phobia in the KiBA III program. They had to meet the criteria of a specific phobia as described in the DSM-5. Children with phobias in all categories were included: animal, blood-injection-injury, natural environment, situational or other types. The exclusion criteria were the following:

1. A comorbid problem that requires attention or treatment more immediate than the specific phobia (e.g., severe depressive symptoms, suicidal ideation, psychosis, trauma)

2. Child hazard (e.g., suspected child maltreatment)

3. Problems with understanding the procedure (e.g., being intellectually unable or nonverbal)

4. Changes in anxiety medication during the treatment

5. Other treatment targeting anxiety complaints at the time of the study

Materials

ADIS-C/P

The Anxiety Disorders Schedule Child and Parent (ADIS-C/P) measured anxiety and avoidance in a 15-minute interview (Siebelink & Treffers, 2001; Silverman & Albano, 1996). It has two versions, one for the child and one for a parent or caregiver. The ADIS-C/P uses DSM-4 criteria to examine whether children meet criteria for an anxiety disorder. Both interviews were held separately with the participating child and a primary caregiver.

The specific phobia module starts by explaining that some children are fearful for certain things (e.g., snakes or heights) after which the child is asked if they too fear something. Children could answer with [yes], [no] or [other]. Whenever [other] was responded, a short description was written down by the therapist. Subsequently, questions were asked about the different types of phobias. These consisted of animal, blood-injection-injury, situational and other types. Both the child and the caregiver were interviewed, separately. Each phobia type was then rated on a scale from [0-8] for anxiety and interference on each of the interviews and scores of four and above were considered clinically significant. The clinician scored each phobia with a Clinician Severity Rating (CSR), also called interference, with a range from [0 -

8], separate for each informant. See Appendices A.1 and A.2 for respectively the specific phobia module of the ADIS-C/P for child and caregiver.

Interrater reliability of the ADIS-C/P is regarded as strong, as well as test-retest reliability and concurrent validity (Silverman et al., 2001). Interrater reliability was further increased by including CSR guidelines and examples (see Appendix A.3) and instruction videos. For the current study, only the phobia subtypes and interference variable were used.

The Imagery Interview for Specific Phobia in Youth

This structured imagery interview (Van der Meer et al., 2022) was used to measure MI characteristics in t3. The interview consists of 22 questions and can be conducted in 15 minutes. Therapists received two-week online training sessions where they were instructed on how to administer the imagery interview and were provided with instruction videos to learn how to conduct the interview. In the interview, participants were reminded of their most prominent fearful situation. This was often the first fearful situation derived from the Angst en vermijding Vragenlijst bij Kinderen (AVAK-K-NL), a short form based on the Anxiety and Avoidance Scale for Children (Lippert et al., 2021), see Appendix B for the AVAK-K-NL. Subsequently, they were asked to report on any visual MI spontaneously arising when thinking about the fearful situation.

If the child reported MI, the mental image was then summarised, and several MI characteristics were inquired about. When children reported MI, they were asked to rate the vividness, realness, and awfulness of the MI on a [0 - 100] scale. Next, children were asked in what proportion the image reflected a fantasy, information they learned, a flashback or flashforward. Answers were rated on a scale ranging from 0 [Not at all] to 4 [Completely yes]. Subsequently, they were guided to report on to what extent their mental image was viewed from an observer perspective and field perspective. They could report to what extent the MI was perceived from an observer perspective on a scale from [0 - 100], and again for the field

perspective [0 - 100]. Finally, they were surveyed about sensory perceptions across several sensory modalities (bodily, tactile, auditory, gustatory and olfactory) on a scale ranging from [0 - 100] and how often the image had occurred over the past two weeks, where participants were asked to respond with either [never], [once], [1-5 times], [>5 times] or [>10 times]. Additionally, experienced emotions regarding the MI and therapists rating of vividness, realness, and awfulness of the primary MI were also surveyed, but beyond the scope of the current study. See Appendix C for the Imagery Interview for Specific Phobia in Youth form.

Out of 16 participants 11 reported visual MI. Of those 11, several values are missing across the Imagery Interview. A minimum of 36.4% and a maximum of 54.5% of the data for a given variable in the Imagery Interview were missing. Across the entire Imagery Interview, a total of 25.1% of data was missing.

Procedure

The study can be considered pragmatic because it was conducted in real-world clinical practice settings with typical patients and by qualified clinicians. The participants received treatment in one of six child outpatient clinics: the Leiden University Treatment and Expertise Centre (LUBEC), Leiden, the Netherlands; UvAminds, academic mental health institution for parent and child, Amsterdam, the Netherlands; Accare, academic mental health institution, Groningen, the Netherlands; Sieverding Psychologie, Heemstede, the Netherlands; Kuin psychologen, Haarlem, the Netherlands and The Mental Health Research and Treatment Centre (MHRTC), Ruhr-University Bochum, Bochum, Germany.

A brief telephone screening was held to confirm participants meet the inclusion criteria (t0). A week later, the child and their caregiver visited the clinic for the intake and assessment for the first session (t1). Session two (t2) was an optional experimental session which can be disregarded for the current study because it was not used. Three weeks later,

session three (t3) took place in which The Imagery Interview for Specific Phobia in Youth was conducted. Subsequently, in session four (t4) the treatment itself took place. In session five (t5) the treatment session was evaluated, and homework instruction was given. Children were instructed to practise exposure exercises for four weeks, after which the first follow-up was held (t6). In this follow-up session, the complete treatment was assessed. After six months, another follow-up session was scheduled, and the procedure was evaluated (t7).

For the current study, only data from t1 (ADIS-IV, AVAK-K-NL) and t3 (MI interview) were used. Both the child and the primary caregiver filled out informed consent forms in t1 and it was made clear that withdrawing from the study was possible at any given time. Children received a small present in the last session to thank them for their effort; no other compensation was given. See Appendix E for the treatment session and data collection.

Statistical analyses

The first research question 'What type of mental images and respective characteristics do children with a specific phobia report?' was answered with the descriptives from the MI interview. For the sensory modalities, medians and interquartile ranges were calculated of the different modalities and described. The variables of the constructs that represent MI (flashbacks, flashforwards, fantasies or learning through provision of negative information) were recoded into dummy variables which allows interpretation of these categorical variables. The five categorical levels of agreement were recoded to values -2, -1, 0, 1, and 2. Subsequently, means and standard deviations were computed. For imagery characteristics and field- and observer perspective, medians were compared and discussed.

The second research question 'Do children report MI relevant to classical conditioning, provision of negative information, and fantasies?' was answered by comparing the medians for the flashback, flashforward, learning from information and fantasy variables from the imagery

interview. For the third research question, the relationship between MI characteristics and interference was tested using Spearman's rank-order correlations, as assumptions for Pearson correlations were not met: first, the assumption that both variables use a continuous scale was violated, as the CSR does not use a continuous scale. Second, it is assumed that the assumption of normality was violated, due to the small sample sizes for vividness ($n = 7$), realness ($n = 6$) and awfulness ($n = 5$). Shapiro-Wilk tests were used to determine normality because the test is deemed suitable for sample sizes with $N < 25$ (Prabhaker et al., 2019). The results did not reach significance for vividness ($W = .19$, p $= .20$), realness ($W = .23$, p $= .20$), and awfulness ($W = .19$, p $= .20$). However, W is low for all three which may suggest departures from normality. In addition, detrended Q-Q plots show minor signs of non-normality but must be interpreted cautiously considering the small sample size. Third, detrended Q-Q plots do not draw flat lines which suggests violation of the linearity assumption. See Appendix D for graphs of detrended Q-Q plots for vividness, realness, and awfulness. The fourth assumption of no significant outliers cannot reliably be checked with a small amount of data points, and as three assumptions are violated, non-parametric Spearman's rank-order correlations were calculated. One for each imagery quality (vividness, realness and awfulness) correlated with the interference of the specific phobia (CSR scores) was calculated. All results were analysed using the Statistical Package for the Social Sciences (SPSS version 28.0.0.0).

There were some missing data in the current study: a moderate amount of data from the imagery interview was missing, one participant's CSR score was missing and another participant's AVAK-K-NL fearful situations. Three participants reported sensory perceptions without reporting MI (the primary condition to conduct the imagery interview) and therefore were excluded specifically from the sensory perceptions computations. A moderate amount of data was missing from the imagery interview (25.1%). This decreased the statistical power in

an already small sample. To preserve the largest sample size, participants with missing data were included.

Results

The sample ($N = 16$) consisted of children with diverse types of specific phobias, see Table 1 for descriptive statistics and ADIS-C/P variables.

Table 1
Descriptive Statistics and ADIS-C/P

Variable		Valid n	%	M	SD	Range
Gender	Female	10	63			
Age				10.5	1.8	8 - 14
CSR				5.7	1.0	1 - 8
Phobic object	Dog	7	44			
	Injection	7	44			
	Button	1	6			
	Spider	1	6			

Type of MI and characteristics

Most children (68.8%) reported visual imagery. Vividness was the highest reported of the visual MI characteristics compared to realness and awfulness. Flashforwards and flashbacks reflected visual MI to a greater degree than learning through information or fantasies. Exploratorily, for the observer- and field perspective responses were extreme. Three children felt their MI was perceived fully (100) from an observer perspective while two children reported a field perspective (100) and one child reported both perspectives in full (100). Regarding the other modalities, bodily sensory modality received the highest ratings and was reported most frequently (37.5%) after the visual modality. For an overview, see Table 2. The responses to the visual MI representations variables were extreme and either 'strongly disagree' or 'strongly agree'. One participant reported a mixed perspective: maximum scores on both observer perspective and field perspective.

Visual MI representations

The responses to the visual MI representations variables (flashforward, flashback, learning through information and fantasy) were extreme and either 'strongly disagree' or 'strongly agree'. Flashforwards and flashbacks represented MI to a greater degree than learning through information or fantasies.

Table 2

Imagery Characteristics

Variable	Valid *n*	*Mdn*	*IQR*	Range
Visual MI characteristics				
Vividness	7	55.0	57.0	30 - 100
Realness	6	45.0	35.0	20 - 80
Awfulness	5	45.0	60.0	5 - 90
Visual MI representations				
Flashforward	6	0.17*	1.33*	-2 - 2
Flashback	7	0.14*	2.04*	-2 - 2
Learning through information	6	-0.67*	2.07*	-2 - 2
Fantasy	7	-1.00*	1.41*	-2 - 1
Perspective of visual MI				
Observer perspective	6	100.0	100.0	0 - 100
Field perspective	6	50.0	100.0	0 - 100
Other sensory modalities				
Bodily	6	53.3	78.0	10 - 95
Tactile	5	9.0	23.0	0 - 40
Auditory	5	20.0	50.0	0 - 90
Gustatory	5	0	0	0
Olfactory	5	0	0	0

* Means and standard deviations were used for these dummy variables

Associations between interference and vividness, realness and awfulness

Correlations were non-significant at the *p* < .05 level yet showed positive relationships

between interference and vividness, realness, and awfulness, see Table 3.

Table 3

Spearman's Rank-Order Correlation Coefficients

			Spearman		
			df	rho	*p*
Interference (CSR)	*	Vividness	5	.037	.468
	*	Realness	4	.508	.152
	*	Awfulness	3	.105	.433

Discussion

The study set out to explore MI characteristics in children with specific phobias and

test if there is a positive relationship between phobic interference (CSR) and imagery

characteristics vividness, realness, and awfulness. The majority reported visual MI (68.8%).

Vividness reached higher scores than both realness and awfulness. Most strongly, participants

agreed that their MI reflects flashforwards, closely followed with flashbacks. Contrary to

expectations, associations between interference and vividness, realness, and awfulness were

unconfirmed. Associations between interference and vividness and awfulness were weak, and

the association between interference and realness was moderate. Observer- and field

perspective seemed mixed: either visual MI fully represented the observer perspective or the

field perspective. Bodily perception was the most frequently reported sensory modality after

the visual modality (37.5%), and no gustatory or olfactory perceptions were reported.

The proportion of participants that reported visual MI (68.8%) was comparable to

adults with elevated anxiety or phobias although proportions differ across studies: 80.6% of

adults with a vomiting phobia reported visual MI (Price et al., 2012); 69% of adults anxious about spiders (Pratt et al., 2004); 78% of adults with health anxiety and snake phobia (Muse et al., 2010; Hunt et al., 2006); 57% of undergraduate students with social anxiety (Ashbaugh, Fishman & Houle-Johnson, 2019); 100% of adolescents with social phobia (Schreiber & Steil, 2013) and 76% of anxious non-ASD children (Ozsivadjian et al., 2017). Therefore, the proportion of children in the current study that report visual MI seems somewhat comparable to those found in the available literature.

Vividness in this study (Mdn = 55.0) can be considered comparable to rates found in other samples: non-ASD anxious children (M = 64.0, Ozsivadjian et al., 2017) and adults with a vomiting phobia (M = 46.0, Price et al., 2012). Visual imagery realness and awfulness are both slightly lower when compared to other samples: e.g., realness of flash-forward images in young adults with speech anxiety (M = 61, Thunnissen et al., 2022). Both visual imagery realness and awfulness in the current study were slightly lower when compared to a different study with children with high anxiety (Mdn = 45.0, Mdn = 45.0 vs. M = 59.0, M = 68, Ozsivadjian et al., 2017).

The participants in the current study were, on average, younger than 14 years old. Children below this age typically have not fully developed two cognitive functions essential for vivid imagery: long-term memory and working memory (Schwarz et al., 2020). Moreover, an untested prediction is that when children reach prepubescence or adolescence, they become more capable of deliberate memory recall leading to increased emotionality (Burnett Heyes et al., 2013). Therefore, the young age of the current sample could partially explain the slightly lower realness and awfulness. However, to move beyond speculation additional testing with larger samples of children with specific phobias or replication is needed to explore the factors that have contributed to the lower ratings of realness and awfulness observed currently, and whether these findings reflect the general population.

Participants most strongly agreed with the idea that their MI resembles a flashback or flashforward, as opposed to provision of information or fantasies. This finding aligns with the literature. For instance, 96% of adults with social phobia felt their MI was 'closely linked' to a memory (Hackmann, Clark & McManus, 2000). When adults were asked if their MI is in fact an actual memory, most participants with OCD and with health anxiety agreed (Speckens et al., 2007; Muse et al., 2010). The literature suggests that flashforwards may involve multiple experiences, possibly merging flashbacks and flashforwards resulting in hybrid experiences (Thunnissen et al., 2022). Ultimately, the results indicate that visual MI in children with specific phobias may contain both flashbacks and flashforwards.

In multiple studies, imagery characteristics have been linked to anxiety and avoidance (e.g., Hoppe et al., 2022; Schwarz et al., 2020). Unexpectedly, associations between interference and imagery characteristics (vividness, realness and awfulness) were unconfirmed. The associations did however move in the positive direction as predicted. As vividness influences the gravity of negative emotions, similar findings were expected in the current study. Most likely, the non-significant findings are due to the small sample size which resulted in insufficient statistical power. Specifically, statistical power in the current study was 14%. A sample size of $N = 64$ would have allowed sufficient power, when running a post-hoc power analysis with the statistics software-package G-Power (Buchner et al., 2007). If the study were replicated or future studies focusing on this subject investigated the same associations, a sample size equal or larger than 64 participants would be recommended.

Regarding the exploratory variables, the observer- and field perspectives seem mixed in the current study. In the literature, the different perspectives seem to show differently across anxious disorders (Schwarz et al., 2020). The heterogenous presentation in the current study may have been influenced by the diverse nature of the specific phobia disorder with its different subtypes combined with the small sample size of the current study. Therefore,

additional studies using larger samples may improve our understanding of the presentation of the observer- and field perspectives in this population. Concerning non-visual sensory modalities, bodily perceptions were most frequently reported. These results are comparable to those of two other studies: with adults with social phobia (Hackmann, Clark & McManus, 2000) and spider phobia (Pratt et al., 2004).

Strengths of the current study are the novelty of the subject (as studies regarding MI in children with specific phobia are absent) as well as the use of a clinical sample in different settings for mental health for youth. These initial results offer a first exploration of our understanding of imagery characteristics in this specific population even though results are preliminary and replication in a larger sample is beneficial. Additionally, the study investigated a broad array of MI characteristics. For instance, do MI characteristics present themselves differently across different subtypes of specific phobias? Or do MI characteristics change post-treatment? In general, further investigation is warranted to elucidate the predominant characteristics of MI, particularly for informing treatment strategies.

A limitation of the current study is the small sample size. The sample exhibited a limited array of specific phobia types possibly resulting in a skewed representation of the specific phobia disorder in general. Secondly, due to the sample size, computations resulted in low statistical power i.e., 14%, whereas 80% is considered desirable. Thirdly, several data were missing from The Imagery Interview for Specific Phobia in Youth. Most importantly, some items of the interview were not filled out for children who reported MI. It remains somewhat ambiguous how this was possible. Two-week training sessions for the imagery interview and instruction videos in Dutch and German likely prevented most errors on the interviewer's side. It is however possible that children did not comprehend some questions and failed to notify the instructor, which may have resulted in blanks. An additional possibility may be that children did not understand a question but did not notify the clinician.

In future studies, replication utilising a larger sample size would allow for assessing the relationships between imagery characteristics and phobic severity. A larger sample would also allow for exploring differences in MI characteristics for the different phobic subtypes. Additionally, differences in MI characteristics pre-and post-treatment could be studied to increase our understanding of how treatment affects interference in children with specific phobias. If MI characteristics do not improve after therapy and MI plays an important role in the maintenance of phobic fear in children, incorporating MI in treatment would be more strongly encouraged. Currently, visual MI receives substantial interest in the literature. The bodily modality may be a worthwhile addition to upcoming research, as it is the second most frequently reported sensory modality.

In all, the current study gives preliminary evidence that most children with specific phobias report visual MI. Additionally, vividness was comparable with other studies but realness, and awfulness were slightly lower compared to studies with adults and other anxious disorders. The relation between visual MI characteristics (vividness, realness, and awfulness) and interference found no support in the results. However, additional studies with larger samples could clarify this relation. The results of the current study are novel and add to the existing literature investigating MI in children with specific phobias. Additional research could emphasise the importance of understanding MI and its characteristics for the benefit of more efficacious treatment while adding to our understanding of MI characteristics in children with specific phobias, benefitting clinical practice and interventions.

References

Ashbaugh, A., Fishman, K., & Houle-Johnson, S. (2019). Intrusive social images in individuals with high and low social anxiety: a multi-method analysis. *Behavioural and Cognitive Psychotherapy*, 47(5), 594–610. doi:10.1017/S1352465819000043

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychiatric Association. doi: 10.1176/appi.books.9780890425596

Buchner A., Erdfelder E., Mayr S., & Faul F. (2007). A short tutorial of GPower. *Tutorials in Quantitative Methods for Psychology*, 3(2), 51–59.

Burnett Heyes, S., Lau, J., & Holmes, E. (2013). Mental imagery, emotion and psychopathology across child and adolescent development. *Developmental Cognitive Neuroscience*, 5, 119–133. doi:10.1016/j.dcn.2013.02.004

Caspi, A., Moffitt, T., Newman, D., & Silva, P. (1996). Behavioral observations at age 3 years predict adult psychiatric disorders. Longitudinal evidence from a birth cohort. *Archives of General Psychiatry*, *53*(11), 1033–1039. doi:10.1001/archpsyc.1996.01830110071009

Clark, D. (1986). A cognitive approach to panic. *Behaviour Research and Therapy*, *24*(4), 461–470. doi:10.1016/0005-7967(86)90011-2

Davis, T., Ollendick, T., & Öst, L. (2019). One-session treatment of specific phobias in children: recent developments and a systematic review. *Annual Review of Clinical Psychobiology*, 15(1), 233–256. doi: 10.1146/annurev-clinpsy-050718-095608

Holmes, E., & Agren, T. (2020). 100 words on mental imagery – 100 words. *The British Journal of Psychiatry,* 216(4), 196-196. doi:10.1192/bjp.2020.41

Holmes E, Geddes J, Colom F., & Goodwin G. (2008). Mental imagery as an emotional

amplifier: application to bipolar disorder. *Behaviour Research and Therapy*. 46(12), 1251-1258. doi:10.1016/j.brat.2008.09.005

Hoppe, J., Holmes, E., & Agren, T. (2022). Imaginal extinction and the vividness of mental imagery: Exploring the reduction of fear within the mind's eye. *Behavioural Brain Research*, 418. doi:10.1016/j.bbr.2021.113632

Jankowska, D., & Karwowski, M. (2023). How Vivid Is Your Mental Imagery? Validation of the Vividness of Visual Imagery Questionnaire in Five Polish Samples. *European Journal of Psychological Assessment*, 39(6), 437–448. doi:10.1027/1015-5759/a000721

Kuyken, W., & Howell, R. (2006). Facets of autobiographical memory in adolescents with major depressive disorder and never-depressed controls. *Cognition and Emotion*, 20(3-4), 466–487. doi:10.1080/02699930500342639

LeBeau, R., Glenn, D., Liao, B., Wittchen, H., Beesdo-Baum, K., Ollendick, T., & Craske, M. (2010). Specific phobia: a review of DSM-IV specific phobia and preliminary recommendations for DSM-V. *Depression and Anxiety*, 27(2), 148–167. doi:10.1002/da.20655

Lippert, M., Sommer, K., Flasinski, T., Pflug, V., Rölver, A., Christiansen, H., In-Albon, T., Knappe, S., Romanos, M., Tuschen-Caffier, B., Schneider, S (2021). Personalized assessment of anxiety and avoidance in children and their parents—development and evaluation of the anxiety and avoidance scale for children. *Frontiers in psychology*, 12(703784). doi:10.3389/fpsyg.2021.703784

Muse, K., McManus, F., Hackmann, A., Williams, M., & Williams, M. (2010). Intrusive imagery in severe health anxiety: Prevalence, nature and links with memories and maintenance cycles. *Behaviour Research and Therapy*, 48(8), 792–798. doi: 10.1016/j.brat.2010.05.008

Ozsivadjian, A., Hollocks, M., Southcott, J., Absoud, M., & Holmes, E. (2017). Anxious

    imagery in children with and without autism spectrum disorder: an investigation into

    occurrence, content, features and implications for therapy. *Journal of Autism and*

    Developmental Disorders, 47(12), 3822–3832. doi:10.1007/s10803-016-2840-3

Prabhaker, M., Chandra, M., Uttam, S., Anshul, G., Chinmoy, S., & Amit, K. (2019).

    Descriptive Statistics and Normality Tests for Statistical Data, 22(1), 67–72.

    doi:10.4103/aca.ACA_157_18

Pratt, D., Cooper, M., & Hackmann, A. (2004). Imagery and its characteristics in people

    who are anxious about spiders. *Behavioural and Cognitive Psychotherapy*, 32(2),

    165–176. doi:10.1017/S1352465804001158

Price, K., Veale, D., & Brewin, C. (2012). Intrusive imagery in people with a specific

    phobia of vomiting. *Journal of Behavior Therapy and Experimental Psychiatry*,

    43(1), 672–678. doi:10.1016/j.jbtep.2011.09.007

Schacter, D., Addis, D., and Buckner, R. (2007). Remembering the past to imagine

    the future: the prospective brain. *Nat. Rev. Neurosci*. 8, 657–661. doi:

    10.1038/nrn2213

Schreiber, F. & Steil, R. (2013). Haunting self-images? The role of negative self-images in

    adolescent social anxiety disorder. *Journal of Behavior Therapy and Experimental*

    Psychiatry, 44(2), 657-661. doi: 10.1016/j.jbtep.2012.10.003.

Schwarz, S., Grasmann, D., Schreiber, F., & Stangier, U. (2020). Mental imagery and its

    relevance for psychopathology and psychological treatment in children and

    adolescents: a systematic review. *International Journal of Cognitive Therapy*, 13(4),

    303–327. doi:10.1007/s41811-020-00092-5

Siebelink, B. & Treffers (2001). Nederlandse versie van het Anxiety Disorders

Interview Schedule for DSM-IV - Child version (ADIS-C). Lisse: Swets Test
Publishers.

Silverman, W. & Albano, A. (1996) The anxiety disorders interview schedule for
children and parents— DSM-IV version. *Open Journal of Psychiatry*, 3(1A),
Graywind, New York.

Silverman W., Saavedra L., & Pina, A. (2001). Test-Retest Reliability of Anxiety Symptoms
and Diagnoses with the Anxiety Disorders Interview Schedule for DSM-IV: Child
and Parent Versions. *Journal of the American Academy of Child & Adolescent
Psychiatry*, 40(8), 937–944. doi:10.1097/00004583-200108000-00016

Speckens, A., Hackmann, A., Ehlers, A., & Cuthbert, B. (2007). Imagery special issue:
Intrusive images and memories of earlier adverse events in patients with obsessive
compulsive disorder. *Journal of Behavior Therapy and Experimental Psychiatry*,
38(4), 411–422. doi:10.1016/j.jbtep.2007.09.004

Thunnissen, M., Nauta, M., de Jong, P., Rijkeboer, M., & Voncken, M. (2022). Flashforward
imagery in speech anxiety: Characteristics and associations with anxiety and
avoidance. *Frontiers in Psychology*, 13. doi:10.3389/fpsyg.2022.975374

Van der Meer, M., Thunnissen, M., & Nauta, M. (2022). The Imagery Interview for Specific
Phobia in Youth.

Vassilopoulos, S., Banerjee, R., & Prantzalou, C. (2009). Experimental modification of
interpretation bias in socially anxious children: changes in interpretation, anticipated
interpersonal anxiety, and social anxiety symptoms. *Behaviour Research and
Therapy*, 47(12), 1085–1089. doi:10.1016/j.brat.2009.07.018

Wardenaar, K., Lim, C., Al-Hamzawi, A., Alonso, J., Andrade, L,
Benjet, C., Bunting, B., de Girolamo, G., Demyttenaere, K., Florescu, S.,
Gureje, O., Hisateru, T., Hu, C., Huang, Y., Karam, E., Kiejna, A., Lepine, J.

P., Navarro-Mateu, F., Oakley Browne, Piazza, M., Posada-Villa, J., ten Have,

M., Torres, Y., Xavier, M., Zarkov, Z., Kessler, R., Scott, K., de Jonge,

P. (2017). The cross-national epidemiology of specific phobia in the world

mental health surveys. *Psychological Medicine*, 47(10), 1744–1760.

doi:10.1017/S0033291717000174

Wells, A., & Papageorgiou, C. (1999). The observer perspective: biased imagery in social

phobia, agoraphobia, and blood/injury phobia. *Behaviour Research and Therapy*,

37(7), 653–658. doi:10.1016/S0005-7967(98)00150-8

Wraga, M. & Kosslyn, S. (2006). Imagery. *Encyclopedia of Cognitive Science*, L. Nadel.

doi:10.1002/0470018860.s00549

Appendices

Appendix A.1

Specific phobia module ADIS-C (child)

Specifieke fobie

Ongemakkelijk of bang voor bepaalde dingen: ☐ ja ☐ nee ☐ anders
Indien 'ja' of 'anders': _____

Banger dan andere kinderen: ☐ ja ☐ nee ☐ anders
Indien 'ja' of 'anders': _____

1a t/m 1d	Angst ja	Angst nee	Angst-beoordeling (0-8)	Vermijding/ Leed ja	Vermijding/ Leed nee	Interferentie-beoordeling (0-8)
Dier						
Specificeer: _____	☐	☐	☐	☐	☐	☐
Natuur						
Hoge plekken	☐	☐	☐	☐	☐	☐
Onweer of bliksem	☐	☐	☐	☐	☐	☐
Water	☐	☐	☐	☐	☐	☐
Donker	☐	☐	☐	☐	☐	☐
Bloed/injectie/verwonding						
Een prik krijgen	☐	☐	☐	☐	☐	☐
Bloedafname	☐	☐	☐	☐	☐	☐
Bloed zien uit een wond	☐	☐	☐	☐	☐	☐

Indien 'ja': flauwvallen: ☐ ja ☐ nee ☐ anders
Indien 'ja' of 'anders': _____

	Angst ja	Angst nee	Angst-beoordeling (0-8)	Vermijding/ Leed ja	Vermijding/ Leed nee	Interferentie-beoordeling (0-8)
Situationeel						
Reizen, specificeer: _____	☐	☐	☐	☐	☐	☐
Liften of kleine ruimten	☐	☐	☐	☐	☐	☐
Overig						
Harde geluiden	☐	☐	☐	☐	☐	☐
Verklede mensen	☐	☐	☐	☐	☐	☐
Dokters of tandartsen	☐	☐	☐	☐	☐	☐
Overgeven	☐	☐	☐	☐	☐	☐
Stikken/zich verslikken	☐	☐	☐	☐	☐	☐
Ziek worden	☐	☐	☐	☐	☐	☐
Aangegeven door het kind: _____	☐	☐	☐	☐	☐	☐

Indien bij ten minste één van de genoemde dingen of situaties de angstbeoordeling 4 of meer is; kruis de ruit aan. ◇ CRITERIUM

➡ Indien er geen angsten zijn gerapporteerd bij de inleidende vraag of vraag 1a, of wanneer alle angstbeoordelingen bij vraag 1b minder dan 4 zijn; ga door naar de Paniekstoornis.

Indien van één of meer situaties in de lijst wordt verteld dat ze vermeden worden dan wel doorstaan met intens lijden; kruis de ruit aan. ◇ CRITERIUM
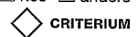
Indien ten minste één specifieke fobie een interferentiebeoordeling van 4 of meer heeft gekregen; kruis de ruit aan. ◇ CRITERIUM

2 Langer dan zes maanden: ☐ ja ☐ nee ☐ anders
Indien 'ja'; kruis de ruit aan. ◇ CRITERIUM

Als alle vier ruiten zijn aangekruist, overweeg dan de diagnose specifieke fobie en kruis de ster aan. SPECIFIEKE FOBIE ☆

Appendix A.2

Specific phobia module ADIS-P (caregiver)

Specifieke fobie

blz 25 Bang voor bepaalde dingen: ☐ ja ☐ nee ☐ anders
Indien 'ja' of 'anders': _____

blz 25	1a t/m 1d	Angst		Angst-beoordeling (0-8)	Vermijding/ Leed		Interferentie-beoordeling (0-8)
		ja	nee		ja	nee	
	Dier						
	Specificeer: _____	☐	☐	☐	☐	☐	☐
	Natuur						
	Hoge plekken	☐	☐	☐	☐	☐	☐
	Onweer of bliksem	☐	☐	☐	☐	☐	☐
	Water	☐	☐	☐	☐	☐	☐
	Donker	☐	☐	☐	☐	☐	☐
	Bloed/ injectie/ verwonding						
	Een prik krijgen	☐	☐	☐	☐	☐	☐
	Bloedafname	☐	☐	☐	☐	☐	☐
	Bloed zien uit een wond	☐	☐	☐	☐	☐	☐
	Indien 'ja': flauwvallen:				☐ ja	☐ nee	☐ anders
	Indien 'ja' of 'anders': _____						
	Situationeel						
	Reizen, specificeer: _____	☐	☐	☐	☐	☐	☐
	Liften of kleine ruimten	☐	☐	☐	☐	☐	☐
	Overig						
	Harde geluiden	☐	☐	☐	☐	☐	☐
	Verklede mensen	☐	☐	☐	☐	☐	☐
	Dokters of tandartsen	☐	☐	☐	☐	☐	☐
	Overgeven	☐	☐	☐	☐	☐	☐
	Stikken/zich verslikken	☐	☐	☐	☐	☐	☐
	Ziek worden	☐	☐	☐	☐	☐	☐
	Aangegeven door de ouder: _____	☐	☐	☐	☐	☐	☐

Indien bij ten minste één van de genoemde dingen of situaties de angstbeoordeling 4 of meer is; kruis de ruit aan.   ◇ CRITERIUM

➡ Indien er geen angsten zijn gerapporteerd bij de inleidende vraag of vraag 1a, of wanneer alle angstbeoordelingen bij vraag 1b minder dan 4 zijn; ga door naar de Paniekstoornis.

Indien van één of meer situaties in de lijst wordt verteld dat ze vermeden worden dan wel doorstaan met intens lijden; kruis de ruit aan.   ◇ CRITERIUM

Indien ten minste één specifieke fobie een interferentiebeoordeling van 4 of meer heeft gekregen; kruis de ruit aan.   ◇ CRITERIUM

blz 26 **1e** Ten minste zes maanden bang: ☐ ja ☐ nee ☐ anders
Indien 'ja'; kruis de ruit aan.   ◇ CRITERIUM
blz 27 **2** In staat om de fobie te noemen zonder bang te worden: ☐ ja ☐ nee ☐ anders
Indien 'ja': _____

Appendix A.3

CSR-guidelines and examples

De volgende richtlijnen zijn van toepassing op de fundamenten van de ADIS-C/P/Kinder DIPS voor de Clinician Rating of Severity. Dit is het nummer waarmee u de ernst van een individuele aandoening weergeeft. De beschrijvingen zijn slechts richtlijnen en zijn geschreven om consistentie tussen beoordelaars te bevorderen. U dient de beschrijving te kiezen die het beste past bij het huidige functioneren van de participanten.

De grens tussen een subklinisch en klinisch probleem ligt tussen een 3 en 4. Voor beide oordelen worden beschrijvingen gegeven om dit probleem te verduidelijken. De belangrijkste overweging om voor een 4 te kiezen zijn dat de cliënt wel voldoet aan de criteria voor een aandoening en dat er specifiek bewijs is van leed en/of aanzienlijke interferentie in ten minste één domein van het functioneren.
Er wordt een algemene toelichting gegeven betreft alle individuele aandoeningen. De individuele stoornisbeschrijvingen geven meer specifiek voorbeelden van de fundamenten van de aandoening. Als er geen specifieke aandoeningen zijn opgegeven, gebruik dan de algemene uitleg voor een gepaste beoordeling.

Aan het einde is een sectie toegevoegd met een aantal veelgestelde vragen.
Opmerking: specifieke fobieën worden beoordeeld over de situatie waarin ze voorkomen. Een kind dat extreem angstig is bij het anticiperen op of het tegenkomen van de fobische stimuli, kan daarom een zeer ernstige naald-/vlieg-/tandartsfobie hebben (CSR tot 8), terwijl de fobie slechts enkele keren per jaar het leven verstoort.
Als er sprake is van meer dan 1 fobie geef je een diagnose en CSR score per fobie.

CSR	Algemene toelichting
0	Alle symptomen die optreden zijn passend bij de leeftijd of de situatie, en
	Er is geen aanhoudende impact op het functioneren in welke context dan ook.
2	Als er symptomen optreden, kan er effectief mee worden omgegaan.
	Symptomen ondermijnen het functioneren in geen enkele context gedurende een langere periode.
3	Heeft niet de vereiste symptomen om aan diagnostische criteria te voldoen.
	Symptomen treden onregelmatig of slechts in één omgeving op. In staat om eventuele symptomen te beheersen.
	Interferentie en/of distress is mild (< = 3)
4	Ervaart voldoende symptomen om aan diagnostische criteria te voldoen.
	Symptomen zijn aanhoudend en komen regelmatig voor in bepaalde contexten.
	Matige interferentie in één of meer contexten en/of Matige distress over het hebben van het probleem.
6	De meeste symptomen worden in aanzienlijke mate ervaren. Symptomen zijn prominent en komen in verschillende contexten voor.
	Aanzienlijke distress over het hebben van het probleem en/of Functioneren in ten minste één context wordt aanzienlijk verstoord.
8	De meeste symptomen worden in ernstige mate ervaren. Symptomen zijn prominent en komen in de meeste contexten voor.
	Aanzienlijke impact op meer dan één functioneringsgebied en/of Extreme distress over het hebben van het probleem.

CSR	Specifieke fobie	EGs
0	Kan geschrokken reageren in een bepaalde onverwachte situatie, maar is in staat om zichzelf te kalmeren en het probleem op te lossen.	Korte paniek of directe respons als reactie op een blikseminslag, lopen door een spinnenweb, een onbekende blaffende hond die naar de benen toe rent of vastzitten in de lift.
2	Geeft een afkeer aan van de situatie, maar is in staat de angst te beheersen zodat de situatie kan worden aangegaan wanneer dat nodig is.	Niet van vliegen houden, maar toch op vakantie gaan. Zou niet vrijwillig een slang aanraken, maar wel een slangenshow in de dierentuin bijwonen. Royaal gebruik van insectenspray om kakkerlakken te doden.
3	Het vermijden van de situatie heeft een minimale impact op het leven. Het confronteren van de situatie veroorzaakt lichte distress/leed, maar de angst kan voldoende worden beheerst om in de situatie te blijven. Uiting van een sterke afkeer van de mogelijke situatie, maar gaat het niet uit de weg als dat nodig is.	Vindt de gedachte aan een naald verontrustend en voelt zich gespannen van tevoren en tijdens, maar laat het toch vrijwillig gebeuren (enige omkoping is oke). Geeft er de voorkeur aan om een nachtlampje te branden 's nachts, maar kan donkere kamers binnengaat om lichten aan te doen.
4	Waakzaam voor de mogelijkheid dat de situatie zicht in logische contexten voordoet. Niet in staat om zichzelf te kalmeren in een onverwachte situatie. Anticiperende angst leidt tot geruststelling vragen of ander veiligheidsgedrag. Het vermijden van situaties heeft een matige impact op het leven en/of veroorzaakt matige distress als een situatie wordt verwacht.	Zorgen over mogelijke honden die niet aangelijnd zijn in het park. Voedsel wordt klein gesneden om verstikking te voorkomen. Moet naar het schoolkantoor gestuurd worden om hulp te krijgen om te kalmeren nadat een spin in de klas over het bureau heeft gelopen. Zal niet naar logeerpartijtjes gaan in het geval dat hij/zij naar verwachting in het donker moet slapen.
6	Waakzaam voor de mogelijkheid dat de situatie zich in veel contexten voordoet. Pogingen om aan de situatie te ontsnappen, veroorzaakt ongepast gedrag. Het vermijden van situaties heeft een aanzienlijke impact op het leven. Aanzienlijk anticiperende angst die een aanzienlijke invloed heeft op dagelijkse activiteiten (bijv. eten, slapen, naar school gaan).	Vraagt altijd of er honden aanwezig zullen zijn bij het bezoeken van bekende en onbekende mensen. Barst in tranen uit en weigert terug te keren naar het feest nadat de hond van de buren heeft geblaft. Weigert grootouder te bezoeken die een hond heeft. Dieet is beperkt tot zacht voedsel. Kan niet buiten spelen als het winderig is. Betreedt niet zelfstandig delen van het huis in donker.
8	Pogingen om te ontsnappen of de situatie te vermijden, brengt zichzelf in gevaar. Angst voor de situatie leidt tot ongepast of cultureel onaanvaardbaar gedrag voor de leeftijd. Angst voor de situatie leidt tot isolatie of huisgebondenheid. Angst leidt tot vermijding die het vermogen om levensdoelen te bereiken saboteren.	Weigert benodigde medische behandeling. Achterlopen op school wegens het nagaan van het weer voor stormen. Verlaat het huis niet zonder ouder om te voorkomen dat boerderijdieren/honden "aanvallen". Rent bij het zien van een hond zonder te kijken een drukke straat op of zo snel en ver van ouders vandaan dat hij/zij deze kwijt is.

Appendix B

AVAK-K-NL

Geef hier alsjeblieft aan voor welke situaties, dieren en/of voorwerpen (objecten) je bang bent. Schrijf eerst de 5 situaties, dieren of dingen op waar je het meest bang voor bent in de volgende tabel. Zulke situaties kunnen bv. een spreekbeurt geven, met de lift gaan of alleen ergens gaan logeren zijn. Ook kun je hier dieren zoals honden, spinnen of dingen zoals bloed en injectiespuiten invullen.

Het is belangrijk dat je de 5 situaties, dieren of dingen noemt waar je op dit moment het meest bang voor bent. Schrijf ook de angst op waarvoor je bij ons in behandeling bent gekomen.

Kruis dan alsjeblieft voor elke situatie, dier of ding aan hoe **hoog** je **angst** ervoor is.

En kruis dan aan hoe **vaak** je deze situaties, dieren of dingen **uit de weg gaat** (**vermijd**).

Ik ben bang voor de volgende situaties en / of dingen:

1. _____
2. _____
3. _____
4. _____
5. _____

Hoe hoog is je angst ervoor?

	Geen angst	Lichte angst	Matige angst	Veel angst	Zeer veel angst
1.	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐

Hoe vaak vermijd je deze situatie/ dit object?

	Vermijd niet	Vermijd zelden	Vermijd af en toe	Vermijd vaak	Vermijd altijd
1.	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐

Appendix C

The Imagery Interview for Specific Phobia in Youth

Imagery interview

Benodigdheden: geselecteerde AVAK situatie (NB selecteer vooraf de AVAK situatie die voor het kind het meest relevant is), apparatuur voor opname

Start interview algemeen:

Pak de geselecteerde AVAK situatie erbij; voor het kind/de jongere de meest relevante situatie en stel vragen over die situatie. *Stel je komt in aanraking met [… die situatie], stel het gaat zo gebeuren (Zometeen wordt je geprikt, of moet er een spin over je hand lopen). Wat zou er dan gebeuren bij jou? Wat merk je dan bij jezelf? Wat voel je dan in jouw lijf? En wat merk je nog meer?*

> Kruis aan:
> - o Noemt spontaan visuele beelden betreffende: verleden-toekomst-fantasie
> - o Noemt spontaan lichamelijke reacties, namelijk:
> - o Noemt spontaan een angstige gedachte, namelijk:

Introductie imagery:

Geef een definitie van beelden, naast het denken in woorden wat mensen in hun hoofd kunnen hebben:

'Wij gaan het zo hebben over de dingen die door je hoofd gaan als je bang bent. Dit kunnen gedachten zijn of een soort foto's of filmpjes (beelden). Met gedachten bedoel ik wat je denkt in woorden. Als je bang bent voor spinnen*, kan je een gedachte hebben als: 'ik vind de zolder eng omdat er vaak spinnen zitten', wat dan in woorden door je hoofd gaat. Maar je kunt ook voor je zien of bijna voelen wat voor vieze harige poten een spin heeft, of je voorstellen (een beeld maken) dat een spin op je valt als je op zolder loopt. Dit zijn dan meer plaatjes of filmpjes in je hoofd in plaats van woorden. Heb je nog vragen over wat ik met plaatjes of filmpjes bedoel? … Kan je me een voorbeeld geven van een gedachte in woorden en van een plaatje of filmpje?' (Help het kind eventueel door een voorbeeld, zoals een spreekbeurt of presentatie geven, te noemen waar ze een gedachte een plaatje of filmpje bij aan kunnen geven).

Wij zijn benieuwd hoe het bij jou zit, we zijn benieuwd naar plaatjes of filmpjes die jij misschien hebt die te maken hebben met je angst bijvoorbeeld tijdens voor of na een enge situaties. Dit kunnen duidelijke plaatjes of filmpjes zijn maar ook meer korte of vage plaatjes of kunnen plaatjes zijn van dingen die gebeurd zijn.

Dan wil ik je nu vragen of je ook weleens plaatjes of filmpjes in je hoofd hebt bij [… (AVAK situatie)], bijvoorbeeld tijdens, voor of na deze situatie, of als je eraan denkt dat je het echt moet gaan doen?' (Eventueel herhalen in andere woorden, zoals voor je zien, foto's, of meer korte of vagere plaatjes of voorstellingen/beelden van iets). Kan je me vertellen wat je dan voor je ziet, wat gebeurt er, waar is het, wie is/zijn er? Wat gebeurt er daarna? Hoe voel je je? Is er nog meer?

> Antwoord (NB aantekeningen vooral bedoelt om beeld helder te krijgen voor interview, hoeft niet in detail beschreven te worden):

- Als er een plaatje is stel de vragen uit de tabel. In het geval van meerdere plaatjes: samen de meest relevante uitkiezen, kies het plaatje dat de meeste spanning oproept en het vaakst voorkomt.

> Meerdere plaatjes: ja -nee

- Ga verder met het meest relevante plaatje en zet dit "stil"

> **Met opmerkingen [MMvd1]:** *Als er sprake is van spinnenangst gebruik hondenvoorbeeld:. als je bang bent voor honden, kan je een gedachte hebben als: 'ik vind het park eng, omdat daar honden los rondlopen', wat dan in woorden door je hoofd gaat. Maar je kunt ook voor je zien of bijna voelen hoe een hond op je springt.

Vraag: Het gaat dus om … (vat het plaatje samen)	Antwoord:
1.Gaat dit plaatje over iets waarvoor je bang bent dat het gaat gebeuren? (dus: een flashforward)	0 – helemaal niet, 1 – grotendeels niet, 2 - een beetje wel, een beetje niet, 3 – grotendeels wel, 4 – helemaal wel
2. Heeft dit plaatje te maken met iets wat je hebt meegemaakt? (is het een flashback?)	0 – helemaal niet, 1 – grotendeels niet, 2 - een beetje wel, een beetje niet, 3 – grotendeels wel, 4 – helemaal wel
3.Gaat dit plaatje over iets waarover je hebt gehoord van anderen? (dus: leren via informatie)	0 – helemaal niet, 1 – grotendeels niet, 2 - een beetje wel, een beetje niet, 3 – grotendeels wel, 4 – helemaal wel
4. Is het plaatje een fantasie? (dus: meer helemaal zelf bedacht)	0 – helemaal niet, 1 – grotendeels niet, 2 - een beetje wel, een beetje niet, 3 – grotendeels wel, 4 – helemaal wel
Zonodig: het gaat dus om het plaatje (vat samen)	
5.Hoe levendig zie je het plaatje Levendig betekent dat het heel helder is, dat je het heel duidelijk kunt zien en dat je details gemakkelijk kunt zien.	0-100:
6.Hoe sterk voelt het dat het (schrik)beeld op dat moment echt gebeurt?	0-100
7a .Zie je het plaatje vanuit je eigen ogen waarbij je details ziet van dingen die om je heen gebeuren?	Ja/nee
7b.Is het plaatje meer vanuit de ogen van een ander (dat je je naar jezelf kijkt dat je in het plaatje staat)	Ja/nee
8. Hoe afschuwelijk is het plaatje?	0-100:
9a. kijkend naar het plaatje, voel je je dan: 9b. Heb je dan een gevoel van	Angstig 0-100: Verdrietig 0-100: Blij 0-100: Boos 0-100: Walging 0-100: Schaamte 0-100
10. Hoe vaak heb je het plaatje de afgelopen twee weken gehad?	Helemaal niet, 1 keer, tussen de 1 en 5 keer, meer dan 5 keer, meer dan 10 keer

Pak de geselecteerde AVAK situatie er wederom bij. *Stel je komt in aanraking met … die situatie, stel het gaat gebeuren (Zometeen wordt je geprikt, of moet er een spin over je hand lopen).*

11. Hoe sterk voel je dan iets in je lijf?	0-100:
12. Hoe sterk voel je dan iets op je huid?	0-100:
13. Hoe sterk hoor je dan iets?	0-100:
14. Hoe sterk proef je dan iets?	0-100:
15. Hoe sterk ruik je dan iets?	0-100:

<u>Voor de therapeut om in te vullen over visuele plaatje:</u>

Hoe Levendig: 0-100 Hoe afschuwelijk: 0-100: Hoe realistisch: 0-100

<u>Dit interview afsluiten met:</u>

Na de behandeling gaan we je nog een paar keer vragen naar dit plaatje, en kijken of je het nog op dezelfde manier ervaart. Zullen we dit plaatje "…. " noemen? Dan weet je waar het over gaat als iemand je er weer naar vraagt.

Appendix D

Detrended Q-Q Plots for vividness, realness and awfulness
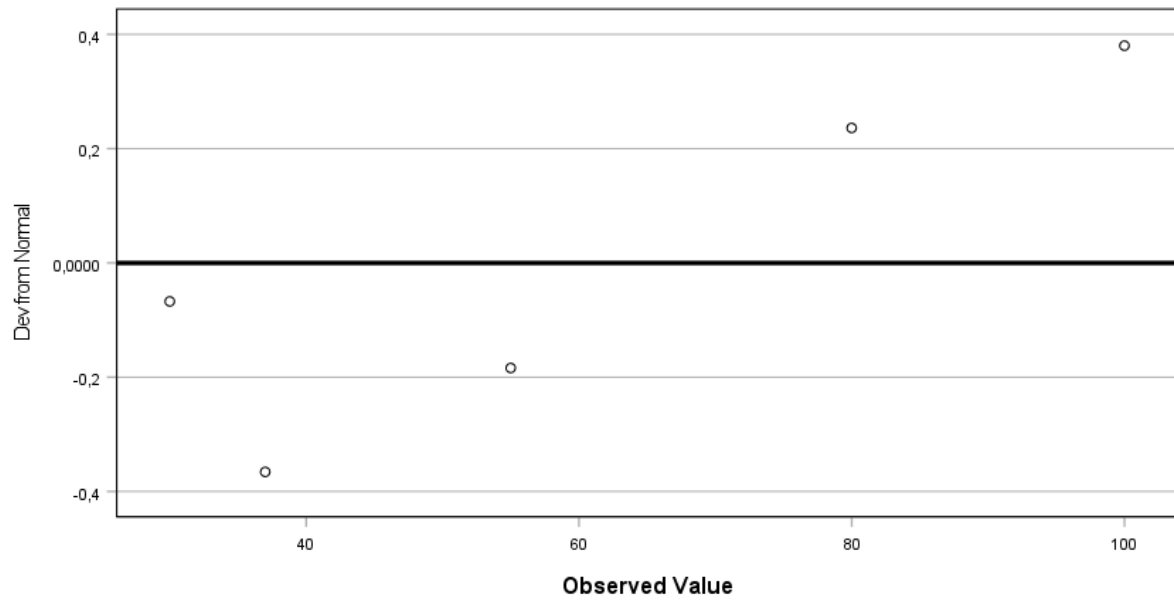
Figure E1

Detrended Normal Q-Q Plot of Vividness

Figure E2

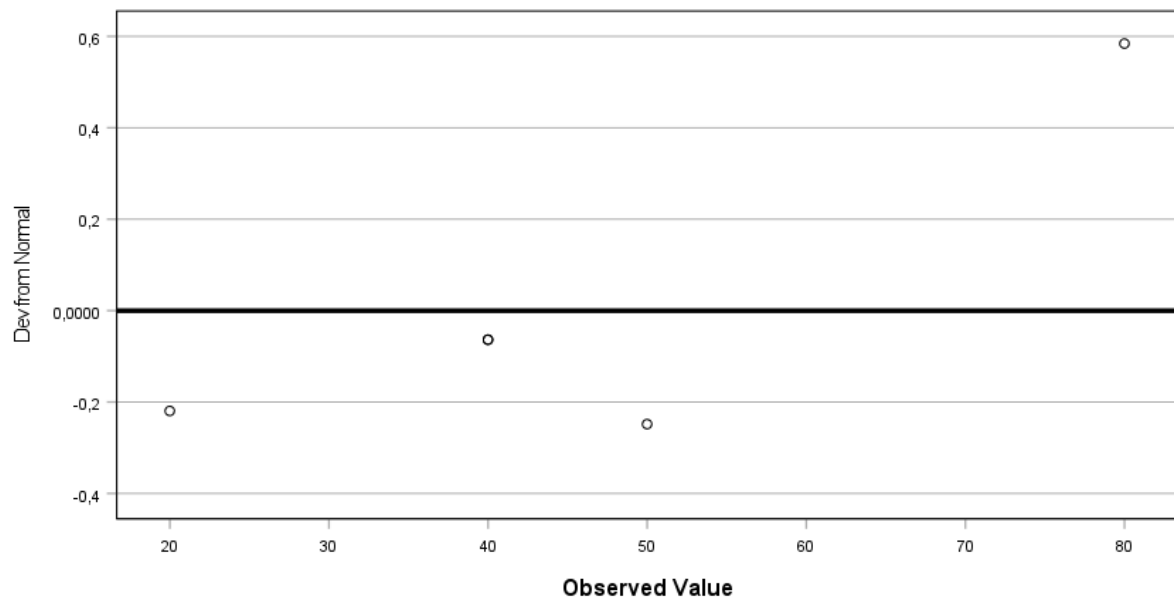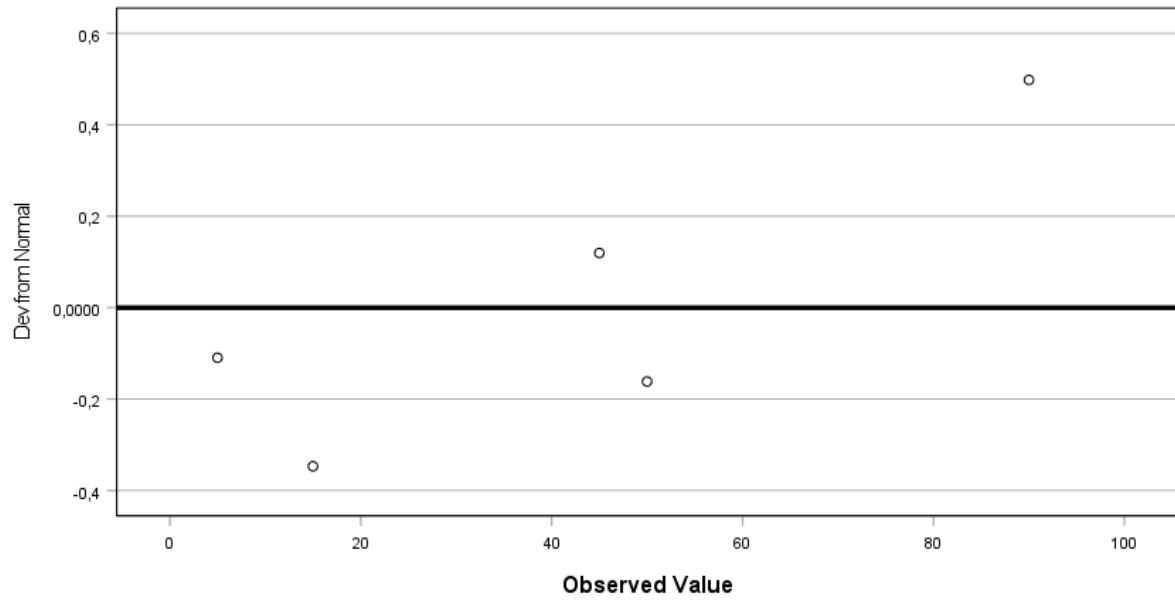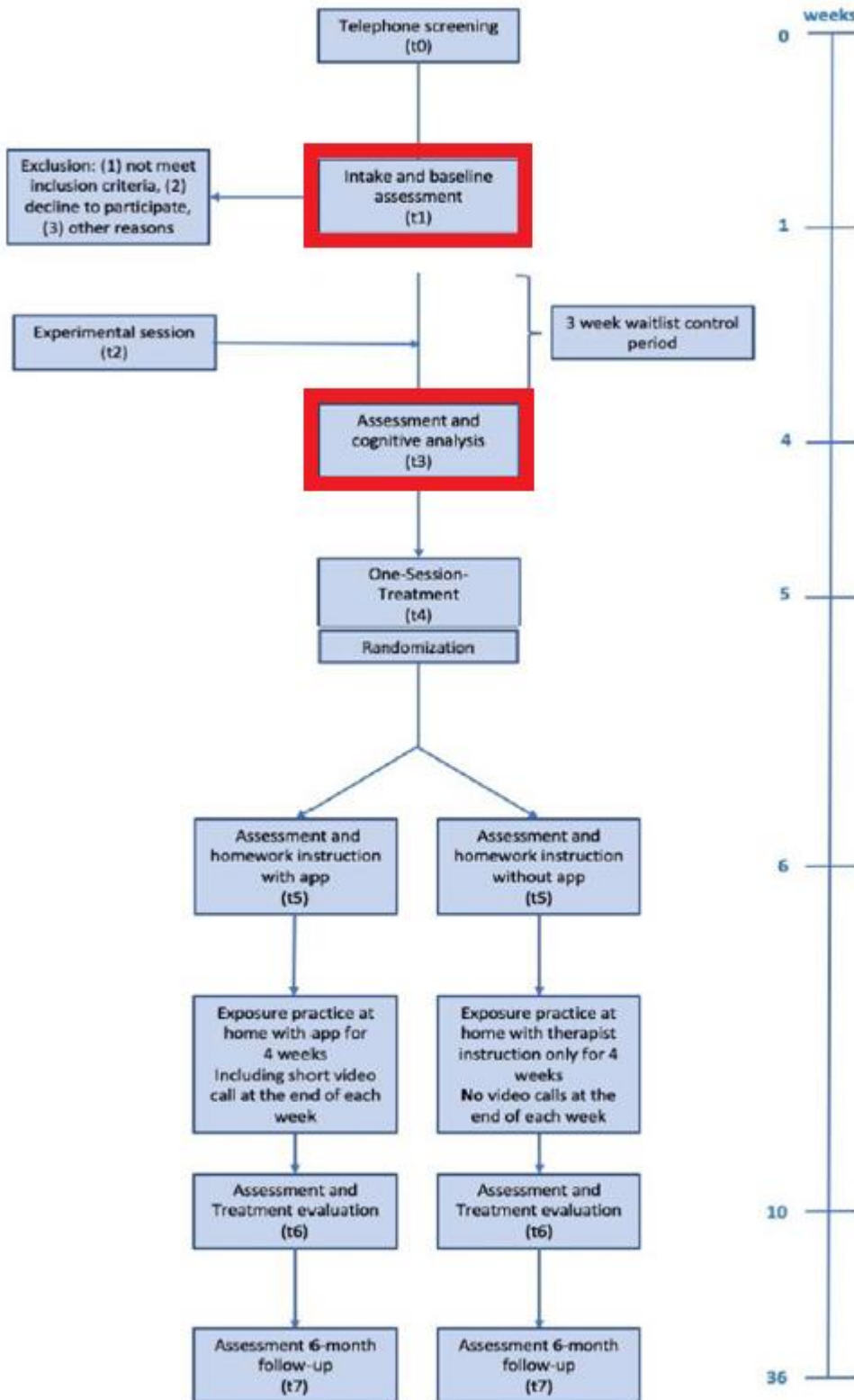Detrended Normal Q-Q Plot of Realness

Figure E3

Detrended Normal Q-Q Plot of Awfulness

Appendix E

Treatment session timeline and data collection chart

Please note that only data from the treatment sessions marked with a red border are used in the current study.

The following data are used:

t1:

- ADIS-IV Specific Phobia module
- AVAK-K-NL

t3:

- Imagery Interview for Specific Phobia in Youth