# Identifying Sleep Disturbance in Children: Insights Using Children's Drawings

## And Clinical Research Portfolio

## PART ONE

(Part two bound separately)

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Degree of Doctorate of Clinical Psychology

**TABLE OF CONTENTS**

**PART ONE (This Bound Copy)**



**Appendices**



**PART TWO (Separate Bound Copy)**

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This is possibly the easiest and yet most difficult section I have had to write. Whilst it would be simple to list all of the names of those people who helped me to achieve this portfolio, it will be difficult to thank them all enough. I will nevertheless endeavour to try.....

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# CHAPTER ONE

## SYSTEMATIC LITERATURE REVIEW

## Drawing Conclusions: Employing Children's Art Work As A Psychological Tool

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## 1. Abstract

**Background:** Child-centred approaches have been gaining favour in recent years in almost every domain of health care. However, few methods are available which are developmentally sensitive enough to elicit children's voices, whilst also accommodating for cognitive and verbal ability. Drawing is a natural and spontaneous childhood activity which has recently been gaining support. Despite increasing popularity, the use of children's drawings as a reliable and valid clinical tool, continues to be debated.

**Aims:** This paper aims to systematically review studies exploring children's drawings as a means of facilitating psychological evaluation in health care research.

**Methods:** Fifteen articles, that satisfied the criteria of this review, were identified using a systematic search strategy including searching electronic databases and hand searching of relevant articles. The methodological quality of articles fulfilling inclusion criteria were rated using an idiosyncratic quality criteria.

**Results:** Overall, there is little available high-quality evidence to support the use of children's drawings as the sole means of psychological evaluation, as currently too few studies meet the gold standard criteria. More encouragingly, it appears that drawing is an effective tool for establishing relationships and rapport building.

**Conclusions:** Research employing children's drawings as a clinical tool has generally been of poor quality and has prevented any firm conclusions being drawn with regards to the usefulness of children's drawings as a means of facilitating psychological evaluation in health care research.

*Key words: child (ren), art, draw(ing)*

## 2. Background

Children have a right to be heard and listened to in all matters affecting them (UNCRC, 1995; SNAP Report, 2003). Eliciting children's views and experiences through child-centred approaches is at the heart of current government direction and has consequently been gaining favour in recent years in almost every domain of health care. Involving children in the health care process is not only essential to delivering the government's vision of a modern NHS, but given the poor concordance between parental and child report, it is crucial to understanding the child's ailments and ultimately will help to inform treatment (Paavonen et al. 2000; Owens, Spirito, McGuinn & Nobile, 2000). Despite such enthusiasm, few methods are available which are developmentally sensitive enough to elicit children's voices, whilst also accommodating for the range of cognitive and verbal abilities (Driessnack, 2005).

Drawing is a natural and spontaneous childhood activity. There are a number of advantages to using artwork as a psychological tool with children, including the ease of administration and the enjoyment that children derive from participating in such a non-threatening and empowering activity (Horstman & Bradding, 1999; Stafstrom & Havlena, 2003). However, if drawings are to be employed within the context of health care then the reliability and validity of this method must be assured.

### 2.1 Art and Mental Health

Much of the early evidence investigating children's drawings as a clinical tool is anecdotal in nature, reported as the opinions of clinicians, or as single case studies (Thomas & Gray, 1992). Since these beginnings, the use of children's drawings has developed considerably both as a methodology and as a clinical tool, and several distinct approaches have emerged including projective drawing, free drawing, and process.

Projective drawing techniques flourished around the 1930's and 40's when the idea that people's drawings projected unconscious information regarding their personality, intellectual maturity, or emotional development, that they could not

necessarily connect with on a conscious level (Rubin, 1999; Malchiodi, 1998). Projective drawings are standardised, pertaining to a strict protocol in their use of instructions, materials, and scoring systems, which must be carefully adhered to. These rigorous standardisation procedures are required in order to establish normative data against which individual performance can be interpreted as well as to ensure the reliability of the test (Rubin, 1999). One of the better known projective techniques is the Draw-A-Person test (Machover, 1949) in which two figures of opposite sex are drawn on separate sheets of paper and the age, education, occupation, fears and ambitions of each figure are indicated. These drawings are then interpreted in relation to a number of projective indices including size, detail, positioning and shading as well as looking at specific features of the drawings such as clothing, facial features and expression.

Other authors prefer to employ a less structured approach and have focussed on children's free drawings, in which a subject matter may or may not be specified. During such procedures the clinician tends to utilise their own idiosyncratic means of interpretation, typically involving the evaluation of specific drawing features or through considering the drawing as a whole where the context and content of the drawing are interpreted.

Still other therapists have developed a preference for focusing on the creative process of drawing and using drawings as a means of rapport building, rather than interpreting the end product. An example of this is Winnicott's (1971) Squiggle Game in which a squiggle would be drawn on a piece of paper and the child/clinician would complete the squiggle and make it into something meaningful, whilst discussing views and feelings on the drawings.

Whilst the purpose and methods of studies employing children's drawings vary considerably throughout the literature, one commonality the authors share is their aim to gain a deeper understanding of the child (Pearson, 2001).

### 2.2 Employing Children's Drawings in Scientific Research

Services and professionals alike are increasingly being required to quantify the effectiveness of their work and to justify their worth in a health care system where

budgets and value for money play a key role. Despite such pressures research looking at drawing as a methodology is still in its infancy. Interestingly, many art therapists view the quantification of the creative process as contrary to the spontaneous and imaginative nature of their work (Rubin, 1999). A further challenge to producing outcome research in this field is the lack of a scientific skill base. Therefore, art therapists may not feel comfortable with designing and undertaking sophisticated research (Rubin, 1999).

There are a considerable number of clinician's, working across health care fields, who choose to incorporate the use of art, in particular drawing, into their routine clinical work. This variation in skills, expertise and knowledge has understandably lead to great variation in the research produced by each discipline. Moreover, the great number of disciplines employing children's drawings in their clinical work makes it challenging for professionals working with children to keep abreast of the literature and have a working knowledge of current best practice.

**2.3 Challenges of Utilising Children's Drawings**

Despite their continued popularity, there are a number of limitations to employing children's drawings in a health care context. Interpretation of children's drawings is a subjective process, which has been highlighted as one of the major limitations of using such a methodology (Lukash, 2002; Piko & Bak, 2006).

Many researchers and clinicians believe it is not possible to classify a child's drawing on the basis of graphic characteristics, and argue that by doing so we reduce children's works of art to a number of symbols and markings, limiting the meaning and information contained in the picture (Golomb 1992; Joiner, Schmidt, & Barnett, 1996; Malchiodi, 1998; Pearson, 2001).

Despite such widespread criticism, there has been renewed interest in employing children's drawings as a therapeutic tool over the last decades (Stafstrom, Rotasy, & Minster, 2002; Lukash, 2002; Stafstrom & Havlena, 2003; Burkitt, Barrett & Davies, 2003a; Burkitt, Barrett & Davies, 2003b; Burkitt, Barrett & Davies, 2004; Burkitt, Barrett & Davies, 2005).

In the only methodologically rigorous review of the literature to date, Driessnack (2005) explored the facilitative effects of offering children the opportunity to draw as an interview strategy as compared with a traditional directed interview. The author reported a large overall effect size (d=0.95), reporting that these results provided strong and definitive evidence for the use of drawings to facilitate communication with children. While this review is an excellent example of the meta-analytic technique, it was rather strict in its inclusion criteria and only six studies in total were reviewed, of which half were conducted by the same research group.

### 2.4 Conclusions

Having considered the current literature and identified significant gaps in the research to date, it is proposed that a review systematically investigating children's drawings as a methodology is warranted.

Given that children's drawings have been used in a wide variety of contexts, with many different aims and objectives, an examination of the entire area is out with the scope of this review. Thus, it is proposed that this review will take a more succinct approach and review those studies where children's projective and free drawings have been employed as a means of facilitating psychological evaluation in health care research.

## 3. Methods

### 3.1 Aims

The primary aim of this systematic review is to investigate the usefulness of employing children's drawings as a means of facilitating psychological evaluation in health care research.

### 3.2 Research Questions

Key Question:

1. Are children's drawings useful as a means of facilitating psychological evaluation in health care research?

Additional Question:

2. Does the experience of the assessor have any bearing on the success of employing drawings as a means of facilitating psychological evaluation in health care research?

### 3.3 Search Strategies

A search of published peer-reviewed journals from the start of indexing until March 2008 was conducted.

The following databases were searched electronically: Ovid Medline R (1950 to Week 3 2008), PsycINFO (1985 to October Week 4 2008), CINAHL (1982 to October Week 4 2008), British Nursing Index and Archive (1985 to February 2008), and EMBASE (1988 to 2008 Week 9). Various combinations of the following search terms and keywords were utilised alongside draw and/or drawing: child, children, paediatric, pediatric.

Reference lists of primary and review articles were hand searched for potentially relevant articles not resourced from the electronic databases. Additionally, correspondence with relevant authors in the field was utilised in order to uncover any relevant unpublished and in-press articles.

### 3.4 Study Inclusion Criteria

All studies utilising a drawing methodology as a means of psychological evaluation in a health care setting were included in the review.

### 3.5 Study Exclusion Criteria

All studies meeting the inclusion criteria but which were single case studies, secondary analysis or follow up studies, dissertations, letters or comments, book chapters, descriptive studies with no manipulation of data, only abstracts available, in the 'Protocol' stage, or reported in a language other than English were not included in the review. Furthermore, those studies where the sole purpose was to utilise children's drawings as a means of cognitive assessment were excluded. Finally, as this review was primarily concerned with reviewing the use of drawings within clinical practice and making clinical recommendations, those studies which looked at children's drawings out with clinical practice, for example in educational settings, were also excluded from this review.

### 3.6 Participants

The definitions of 'child' can vary, and age limits are arbitrary. For the purposes of this review, childhood was denoted as up to and including 12 years of age. Studies were eligible for inclusion therefore, if the average age of participants was between 4-12 years.

#### 3.6.1 Participant Exclusions

Studies were excluded where the age of the participants was not stated, and where the average age of the participants was 13 years or over.

### 3.7 Outcome criterion

Given the limited research in this area and vast variations in drawing methodology, an inclusive attitude towards outcome criterion was adopted. Therefore, all studies which employ drawing methodology as psychological tool, either in conjunction with other outcome measures or on its own, were included in this review.

### 3.8 Study Design

Only studies which employed 10 or more participants ($n \geq 10$) were considered for inclusion.

### 3.9 Study Quality Assessment

Existing standardised quality assessment tools for use as systematic review instruments, such as those by SIGN and COCHRANE, were not employed in this review, as neither randomised controlled trials nor treatment outcome studies were the focus of this review. Individual studies were instead coded using an idiosyncratic quality assessment tool, developed prior to reviewing studies in order to prevent bias.

The following areas were assessed for methodological quality: objectives, participants, outcome measurement, design, statistical analyses, and discussion of results. All studies were critically rated on a 23 item scale and scores awarded based on the quality assessment tool. Each item was of equal weighting and total scores expressed as decimal ranging from 0.0 to 1.0. Studies were classified as of high $\geq 0.75$, moderate 0.6-0.75, low 0.5-0.59 or poor quality $\leq 0.49$. The quality criteria used to determine quality ratings are described fully in Table One.

****Insert Table One Here****

In those studies where data was missing, or the answer to the question was unclear based on the publication material alone, the reviewer contacted the author of the study for further clarification. Where no correspondence was received from the author the question was answered as 'not reported'.

An independent rater reviewed each paper to ensure the reliability of the quality ratings. Intra-class correlation (ICC) between the two raters was calculated to be 0.891. Disagreements were discussed between the raters and a consensus on quality score reached for each paper.

### 3.10 Identification of Papers

One hundred and thirty one studies were identified: 106 through electronic database searching, 21 papers through hand searching of reference lists of relevant studies, and a further 4 papers by personal communication from key researchers in area.

Of these 131 papers, 25 were selected according to title and abstract content whose subject matter was deemed potentially relevant. Full text articles were collected and examined; of which 10 were discarded as they did not meet inclusion criteria (see Table Two for a summary of excluded studies).

****Insert Table Two Here****

Following this process a total of 15 studies were included in this review. An overview of the included studies and their findings is detailed in Table Three.

****Insert Table Three Here****

## 4. Results

The included studies were reviewed in order to determine the usefulness of children's drawings as a means of facilitating psychological evaluation. In addition, the experience of the assessor, in relation to the success of employing drawing as a means of facilitating psychological evaluation, will be examined.

### 4.1 Are children's drawings useful as a means of facilitating psychological evaluation?

Findings from the fifteen studies were mixed. Whilst some authors encouraged the use of drawings as an evaluative tool (Wysocki & Whitney, 1965; Kasuya, Sawaki, Ohno, & Ueda, 2000; White, Wallace & Huffman, 2004), others called for clinicians to be very cautious when making inferences from children's drawings, asserting that it was not possible to use children's drawings as an evaluative tool in isolation (Sturner, Rothbaum, Visintainer & Wolfer, 1980; Tharinger & Stark, 1990; Chantler, Pelco & Metrin, 1993; Joiner et al., 1996; Stefanatou & Bowler 1997; Palmer et al. 2000; Stafstrom et al., 2002; Stafstrom & Havlena, 2003; Massimo & Zarri, 2006). Still other authors do not enter into this debate (Mullis, Mullis, & Kerchoff, 1992; Bradding & Horstman, 2002; Rollins, 2005) commenting only on the clinical utility of drawings within their own population of children.

All of the studies agreed, however, that the request to complete a drawing was met positively by children and helped the authors to engage with the child and explore the issues at hand. The breadth of the clinical populations studied was considerable including children with cancer, epilepsy, migraine, cleft palate, sickle cell disease, mental health problems, and sexual abuse. Subsequently, there was significant variation in the drawing methodologies employed. That is, there were differences in chosen drawing technique, marking criteria, instructions given and materials offered to complete the drawings. Broadly speaking, these can be categorised into studies which implemented projective techniques, those which utilised free drawings, and a mixture of both of these methodologies.

### 4.1.1 Studies Employing Projective Drawing Techniques

Nine of the fifteen articles (60%) studied projective drawing techniques with children (Chantler et al., 1993; Joiner et al. 1996; Kasuya et al., 2000; Mullis et al., 1992; Palmer et al. 2000; Sturner et al., 1980; Tharinger & Stark, 1990; White et al. 2004; Wysocki & Witney, 1965). Five types of projective drawing techniques were employed including Draw-A-Person (DAP), Person Picking an Apple from a Tree (PPAT), House-Tree-Person (HTP), Kinetic-House-Tree-Person (KHTP), and Kinetic-Family-Drawing (KFD). Of the projective drawings the most commonly used was the DAP test, also known as human figure drawings, (N=4), which may be in part due to the ease and brevity of administration and scoring of this test.

Overall, three projective drawing studies concluded by encouraging clinicians to employ children's drawings as an evaluative tool (Kasuya et al., 2000; White et al., 2004; Wysocki & Whitney, 1965). White and colleagues (2004) explored the drawings of a group of 53 children with emotional and behavioural disorders in relation to health. Children drew a person picking an apple from a tree which was rated using the Formal Elements Art Therapy Scale (FEATS), a measurement system based on concrete rather than symbolic artistic variables for example colour, energy space, and rotation. The FEATS consists of 14 subscales in total and is a popularly employed measure in rating drawing's (Anderson, 2001). This study was rated as 'high' on the quality scale, scoring highly on the generic quality criteria in all of the sections. However, it is interesting to note that while the authors conclude children's drawings can be a helpful tool for purposes of diagnosis, their results show that the FEATS was unable to differentiate diagnosis between disorders in a population of children presenting with emotional and behavioural disorders. Furthermore, the number of children enrolled into the study was small and included only 6 girls.

Kasuya et al. (2000) employed KFD in order to explore how children with a cleft palate perceived their family. This study investigated the position of the child's self-image, the distance of the self-image to other individual figures in the drawings, the size of the figures, and finally the actions of the figures. Results showed that there were gender differences in the positioning of drawings. In

addition, father figures were most commonly drawn taking part in daily activities, by typically developing children, while cleft children generally drew their fathers as working. Both groups commonly drew their mothers taking part in household tasks. Whilst the distance from male cleft palate self-images to grandparents was significantly shorter than other distances, no other significant differences between the distances to other individual figures in either group were observed. Finally, it was noted that the largest figure drawn in the family was the father amongst typically developing males and the mother amongst typically developing females; however, in the cleft palate group the same-sex parent was not reliably drawn as the largest figure. Following these results, the authors concluded that Japanese cleft children, aged 7-9 years, felt anxiety and fear towards their family members, and rarely viewed their homes as restful places. They further reported that children with cleft palate perceived major psychological distances from their parents.

Wysocki and Whitney (1965) investigated the body images of physically disabled and typically developing children using the DAP test. Findings of this study report that physically disabled children express more aggression in their drawings, related to their area of disability, than typically developing children. The authors conclude that the DAP test is useful in helping to understand the personalities of physically disabled children.

It is likely, however, that both Kasuya et al. (2000) and Wysocki and Whitney (1965) have over interpreted their results given that neither of these studies employed any additional outcome measures, other than the children's drawings, in order to validate their claims that children's drawings are able to determine levels of anxiety, fear, emotional distress and aggression, respectively. Furthermore, it is interesting to note that both of these studies were rated as being 'poor' in quality. Thus, caution should be exercised when interpreting the authors' recommendations.

On the whole the quality of projective drawing research varied considerably. Of the projective techniques, three of the nine papers (33%) were classified as high quality (Joiner et al., 1996; Palmer et al., 2000; White et al., 2004). The study by

Joiner and colleagues (1996), evaluating projective drawing variables as correlates of emotional distress amongst an inpatient population, was rated the highest on quality in this review. KHTP drawings were completed by 80 child and adolescent psychiatric inpatients and rated on size, detail and line heaviness. Results indicated that size, detail and line heaviness were not were not significantly correlated with any of the objective questionnaire anxiety or depression measures. The authors concluded that whilst drawings are useful rapport-building devices, they are not useful evaluative devices. Whilst these authors may have overstated their recommendations of dismissing utilising projective indices in their entirety, their findings, warning against the continued use of such projective indices until sufficient supportive evidence is available, are undeniable, particularly considering the scientific rigour of their research.

### 4.1.2 Studies Employing Free Drawing Techniques

Five papers employed children's free or spontaneous drawings (Horstman & Bradding, 2002; Massimo & Zarri, 2006; Stafstrom et al., 2002; Stafstrom & Havlena, 2003; Stefanatou & Bowler, 1997).

Free drawings were more idiosyncratic in nature in comparison to projective techniques, and were largely employed as a means of exploring the child's views. None of the free drawing methodologies looked at projective indices, but instead chose to interpret children's artwork holistically.

Authors of children's free drawing studies promoted the use of children's drawings as an adjunct to a more global assessment of the child. None of the authors encouraged the use of children's free drawings as a solitary clinical tool. In their 2002 study, Stafstrom et al. examined the usefulness of children's drawings in the diagnosis of headache. In this large scale study, 226 children attending a neurology clinic were requested to complete a picture of what their headaches felt like. These drawings were then rated as either representative of migraine or non-migraine headaches by paediatric neurologists, blinded to clinical history. The authors concluded that children's drawings of their headache experiences are a simple and inexpensive aid in the diagnosis of headache type. Given that the positive and negative predictive values were 87.1% and 90.6%,

respectively, the authors suggest the use of drawings in the evaluation of any child with a headache, as an adjunct to the clinical history and physical examination should be encouraged.

The quality of the free drawing literature was not of a particularly high standard with 40% of the studies being recorded as 'poor' (Horstman & Bradding, 2002; Massimo & Zarri, 2006), 20% as 'low' (Stefanatou & Bowler, 1997), and the remaining 40% as 'moderate' (Stafstrom et al., 2002; Stafstrom & Havlena, 2003). Therefore, results from these studies should be interpreted with caution. The paper by Massimo and Zarri (2006) in particular scored very poorly on the quality criteria. These authors attempted to explore the use of children's drawings as a mode of communication in a population of 50 Italian children with cancer. Whilst the authors discuss the ease with which drawings can be proposed to children and collected, no information on the materials involved or marking criteria are communicated to the reader and only limited information is available on the collection procedure. Furthermore, the write up of this study was poorly organised and unclear, rendering it difficult to follow from the outset. The research design implemented was not described and there appeared to be no formal analysis of the results, only descriptive comments by the authors. Such methodological limitations made it difficult to critique the study and rendered replication impossible.

Encouragingly, authors of free drawing studies were particularly keen to communicate clinical utility to their readers. In particular Stafstrom and Havlena (2003) remarked on the materials which they utilised in the study, reporting that the use of coloured pencils, as opposed to lead pencils, helped to improve the children's interest in the task and increased the level of detail in the pictures. In addition, Horstman and Bradding (2002) commented that it was not practical to use crayons with their population of children aged 6 to 10 years, as it made the drawing procedure extremely time consuming. Additionally, the authors observed that where drawings are collected in groups, close supervision is important if the drawing is to be representative of individual and not group processes.

### 4.1.3 Studies Employing a Mixture of Projective and Free Drawing Techniques

Only one study used a combination of projective and free drawing techniques and received a quality rating of 'moderate' (Rollins, 2005). This multi-centred study examined the use of drawing to enhance communication in children aged between 7-18 years amongst other aims. Participants included 22 children receiving treatment for cancer in the USA and the UK. Findings indicated that the use of drawing enhanced communication through direct visual expression and/or through verbal comments on the drawings. Unfortunately, no direct comparison between the techniques was conducted, nor did the author offer comment on the differences in clinical utility of these techniques. Moreover, it is not clear who rated the children's drawings and whether they were involved in data collection bringing the raters objectivity into question. In addition, the sample size employed is relatively small given that the authors state that a combination of qualitative and quantitative techniques were utilised. Finally, a wide age range of children were recruited with the majority of children falling into the youngest, 7-9 years, and oldest, 16-18 years, categories, which is not accounted for in the analysis and therefore limits generalisability of results. Results, therefore, must be interpreted in light of these limitations.

In summary, both projective and free drawing techniques, and a mixture of these methods, have been employed in various clinical populations and over a wide age range. Regardless of technique, population, or age, all authors emphasised that this methodology was useful with engagement and rapport building, and was generally met with enthusiasm by the children. In answering the question of using drawings as a means of facilitating psychological evaluation in health care research, currently there is no good quality evidence to support the use of this methodology.

### 4.2 Does the experience of the assessor have any bearing on the success of employing drawings as a means of facilitating psychological evaluation?

As can be seen in Table Two, twelve (80%) of the included studies report the identity, qualifications or direct training of those involved in marking the drawings the children produced (Chantler et al., 1993; Joiner et al., 1996;

Massimo & Zarri, 2006; Mullis et al., 1992; Palmer et al., 2000; Rollins, 2005; Stafstrom et al,. 2002; Stafstrom & Havlena, 2003; Stefanatou & Bowler 1997; Sturner et al. 1980; Tharinger & Stark, 1990; White et al., 2004).

Significant variation in the raters experience and training were noted. Those rating the drawings had a number of different vocations including psychologist, art therapist, researcher, medical doctor, paediatric epileptologist, nurse, paediatric neurologist, student and clinical trainee.

Whilst many of the raters had considerable clinical experience in working with children and interpreting drawings, White et al. (2004) and Mullis et al. (1992) alone reported training their raters specifically for the purposes of the study. None of those authors employing free drawing techniques reported specific training for raters of their drawings. This may be in part due to the nature of this methodology where drawings were interpreted holistically, largely by professionals in the appropriate clinical field. In these instances, raters have tended to take a more qualitative stance, interpreting possible symptomatology present in the drawings. Thus, it could be viewed that these raters training is inherent in their clinical experience with the particular population under investigation.

### 4.2.1 Effect of Formal Training on Study Outcome

The three raters in the study by White and colleagues (2004) were art therapists, one a professor of art therapy with more than 30 years experience in rating children's drawings. The authors report that all raters received training in the use of the FEATS, however, no further details of the training are available. Results indicated that whilst significant group differences were noted for ratings on five of the fourteen FEATS subscales, with drawings of students in the non-impaired-thinking group consistently rated higher than the drawings of students in the impaired-thinking group, the FEATS was unable to differentiate diagnosis between disorders. Interestingly, whilst the White group received training in the FEATS rating scale, raters did not achieve a suitable inter-rater reliability on two of the fourteen scales, which were subsequently dismissed from the analysis. The authors conclude that even in instances where raters are provided with concrete descriptors of ratings, raters continue to interpret aspects of drawings differently.

The Mullis group (1992) investigated the self-esteem of school-age children with leukaemia in a clinic setting, in comparison with a healthy cohort of children. Children were administered the Kinetic Family Drawing-Revised (KFD-R) test and the Coopersmith Self-Esteem Inventory (SEI). Unfortunately, the authors do not detail the process of the training of raters. This study found that whilst children with leukaemia did not differ in self-esteem from healthy children except on the school-academics subscale of the SEI, analyses of the KFD-R revealed significant differences between the healthy and hospitalised groups for emotional tone. Regrettably, a definition of 'emotional tone' is not offered rendering interpretation of these results difficult.

Overall, the impact of the experience of the assessor, in terms of formal training and clinical experience, on the success of employing drawings as a means of facilitating psychological evaluation is somewhat unclear.

## 5. Discussion

Fifteen studies were found that satisfied the criteria of this review. Overall, there is little available high quality evidence to support the use of children's drawings as the sole means of psychological evaluation.

### 5.1 Problems Concerning Quality

Research employing children's drawings as a clinical tool has generally been of poor quality preventing any firm conclusions being drawn. A recurring difficulty encountered in synthesising such studies, regardless of research methodology, is that authors do not provide sufficient detail regarding drawing instructions, materials and collection methods, as well as information concerning who evaluated the drawings, the criteria they implemented and whether they were blinded. In a recent systematic analysis of art therapy research published in Art Therapy: Journal of the American Art Therapy Association (AATA), Metzl (2008) commented that art therapy studies commonly do not adopt a scientific style of reporting, but instead are idiosyncratic in their write up leading them to appear unstructured. Whilst this may be a difficult problem for researchers of art therapy to overcome, it is an important one to address if the field is to advance further.

The weakest section of the projective studies tended to be their analysis. The statistical methods used in the articles varied, and in some instances were inappropriate or were not adequately reported, rendering assessment of the analysis difficult and interpretation of conclusions and recommendations fruitless. In addition, the power of the data in the reviewed studies was not considered by any of the authors. Given that sample sizes over all of the papers ranged from 22 to 226 participants, it is likely that statistical power may be low in some of the research papers, thus, it is possible that some findings went undetected. Of particular note is the lack of reporting whether, or why, children and young people refused to participate in the research. Of the one thousand three hundred and thirty nine children who took part, fourteen did not assent to taking part in the projects and nine children did not complete a drawing once enrolled into the studies. Tharinger and Stark (1990) and Kasuya et al. (2000) commented on the low

numbers of children that did not complete their drawings, whilst White et al. (2004) alone reported specific figures of children who declined to assent and those who did not create a drawing as requested. Even this group, however, do not go as far as to report reasons for declining to assent or create a drawing.

The quality of free drawing research studies ranged from 'poor' to moderate', with none of the studies being of high quality. Free drawing studies suffered from similar methodological limitations to the projective drawing research. Interestingly, free drawing studies were as weak in their use of appropriate outcome measures as they were in their analysis sections. All five of these studies were awarded least points in the outcome measures section due to poor, or lack of reporting of psychometric properties of outcome measures employed. Moreover, authors commonly over-generalised their results. For example, Horstman and Bradding (2002) explored children's perceptions of health-care professionals, the environment in which they are cared for and their information needs when unwell using the Draw-and-Write technique. Results indicated that fear and anxiety were commonly expressed in the drawings of older children. Regrettably, no objective measures of either fear or anxiety were employed. Given that the reliability and validity of children's drawings continues to be questioned throughout the research literature, appropriate and objective outcome measures should be adopted, and the psychometric properties of such measures should be stated, in order that the reader is able to make judgements and interpretations of reliability and validity. This will not only enhance the quality of any research study, but it will also help to draw conclusions with regards to employing children's drawings as a psychological tool.

A further important limitation in the literature is that researchers have tended not to control for confounding variables. One example of this is the ages of those children involved in these studies. A broad age range of children and young people were included in the studies reviewed. Universally children's drawings tend to follow a predictable pattern of development and progression. Frameworks of artistic development offered by Lowenfeld (1947) and Malchiodi (1998) suggest that by adolescence critical awareness begins to develop; therefore, children may be reluctant draw at this stage. Given this, it is surprising to note that

authors have not commented upon the differences between adolescent and child populations in their enthusiasm towards engaging in drawings. This may be an interesting area of research for future projects.

Additionally, in several studies it can be noted that limited information is provided with regards to the collection and marking procedures of the children's drawings (Horstman & Bradding, 2002; Massimo & Zarri, 2006; Stefanatou & Bowler, 1997). This constitutes an important methodological problem as it raises the issue of future replications of the study as well as restricting the clinical application of such techniques. Given that the interpretation of children's drawings encompasses an element of subjectivity belonging to both the artist and the interpreter (Lukash, 2002), and that this is considered to be one of the major limitations of using this methodology (Cox 1992; Piko & Bak, 2006), considerable effort should be made to report the drawing application and marking processes in such a way as to provide the reader with a transparent view of this procedure.

Furthermore, where blinding of the raters is not employed, the raters' objectivity is brought into question. A researcher, who is also a rater, may selectively overvalue or neglect relevant characteristics of the children's drawings, affecting the results and interpretations. The other aspect of this problem is if the rater is also the person involved in data collection, an element of response bias is introduced, as children may lead to respond according to the researcher's expectations, which may be evident in their verbal and non-verbal communications. Therefore, an additional control should be adopted by having both a rater and a data collector, who will have different roles and different functions in the study. However, in cases where this is not possible, this dual role should be at least stated.

### 5.2 Future Research

These above discussed limitations notwithstanding, the published literature concerning the use of children's drawings as a means of facilitating psychological evaluation is compelling and further methodologically rigorous research studies are encouraged.

Children's drawings are likely to continue to enjoy widespread use and popularity amongst clinicians, despite their lack of demonstrated reliability or validity, for a variety of reasons. Firstly, research findings from such studies have been intriguing and are intuitively appealing. Secondly, drawings are a quick and cost effective tool when working with children, requiring little materials other than what is already available in the clinician's office. Given this is it particularly important that future research studies concentrate on producing scientifically rigorous and high quality studies in order to advance the literature base in this area. However, until this time clinicians should remain aware of the highly speculative nature of using children's drawings as a psychological tool.

Future studies may wish to consider the points outlined in Table Four.

****Insert Table Four Here****

## 6. Conclusions

The data available from the reviewed studies presents a mixed picture. Encouragingly, the findings from the studies indicate that utilising drawings with children in a clinical context is valuable in terms of engagement and rapport building. With regards to employing children's drawings as a means of facilitating psychological evaluation in health care research, however, the available evidence is less encouraging. Furthermore, the effect training and experience has on a raters' ability to interpret children's drawings remains to be unclear.

Children's drawings deserve more scientific attention and researchers are encouraged to adopt and capitalise on the wealth of high-quality quantitative and qualitative tools available, which will help to answer questions of reliability, validity and clinical utility of children's drawings in the future.

## 7. References


Anderson, F.E. (2001). Benefits of Conducting Research. Art Therapy: Journal of the American Art Therapy Association, 18(3), 134-141.

Buck, J. (1948). The House-Tree-Person Technique. Los Angeles: Western Psychological Services.

Buck, J. (1966). The House-Tree-Person Technique: Revised Manual. Los Angeles: Western Psychological Services.

Burkitt, E., Barrett, M. & Davis, A. (2003a). Children's Colour Choices for Completing Drawings of Affectively Characterised Topics. Journal of Child Psychology and Psychiatry 44(3), 445-455.

Burkitt, E., Barrett, M. & Davis, A. (2003b). The Effect of Affective Characterisations on the Size of Children's Drawings. British Journal of Developmental Psychology, 21, 565–584.

Burkitt, E., Barrett, M. & Davis, A. (2004). The Effect Of Affective Characterizations On The Use Of Size And Colour In Drawings Produced By Children In The Absence Of A Model. Educational Psychology 24(3), 315-343.

Burkitt, E., Barrett, M. & Davis, A. (2005). Drawings of Emotionally Characterised Figures by Children from Different Educational Backgrounds. International Journal of Art and Design Education 24(1), 71-83.

Burns, R. & Kaufman, S. (1972). Actions, Styles, and Symbols in Kinetic Family Drawings: An Interpretive Manual. New York: Brunner-Routledge.

Carroll, M.K. & Ryan-Wenger, N.A. (1999). School-Age Children's Fears, Anxiety, and Human Figure Drawings. Journal of Pediatric Health Care, 13, 24-32.

Chantler, L. Pelco, L. & Metrin, P. (1993). The Psychological Evaluation of Child Sexual Abuse Using the Louisville Behaviour Checklist and Human Figure Drawings. Child Abuse and Neglect, 17(2), 271-279.

Clements, P.T., Benasutti, K.M., & Henry, G.C. (2001). Drawing from Experience, Using Drawings to Facilitate Communication and Understanding with Children Exposed To Sudden Traumatic Deaths. Journal of Psychosocial Nursing and Mental Health Services, 39(12), 13-20.

Cox, M. (1992). Children's Drawings. Penguin Books: London.

Driessnack, M. (2005). Children's Drawings as Facilitators of Communication: A Meta-Analysis. Journal of Pediatric Nursing, 20(6), 415-423.

Driessnack, M. (2006). Draw-And-Tell Conversations with Children about Fear. Qualitative Health Research, 16(10), 1414-1435.

Feyh, J.M. & Holmes, C.B. (1994). Use of the Draw-A-Person with Conduct-Disordered Children. Perceptual and Motor Skills, 78(3), 1353-1354.

Gardner, H. (1980). Artful Scribbles: The Significance of Children's Drawings. London: Jill Norman Ltd.

Golomb, C. (1992). The Child; Creation of a Pictorial World Berkeley: University Of California Press.

Gregorian, V.S., Azarian, A., Demaria, M.B. & Mcdonald L.D. (1996). Colours Of Disaster, the Psychology of the Black Sun. Arts in Psychotherapy, 23(1), 1-14.

Gross, J. & Hayne, H. (1998). Drawing Facilitates Children's Verbal Reports of Emotionally Laden Events. Journal Of Experimental Psychology: Applied, 4(2), 163-179.

Gross, J. & Hayne, H. (1999). Young Children's Recognition and Description of Their Own and Others' Drawings Developmental Science, 2(4), 476-489.

Gulbro-Leavitt, C. & Schimmel, B. (1991). Assessing Depression In Children And Adolescents Using The Diagnostic Drawing Series Modified For Children (DDS-C). Arts in Psychotherapy, 18(4), 353-356.

Horstman, M. & Bradding, A. (1999). Use The Write And Draw Technique With Children. European Journal of Oncology Nursing, 3(3), 170-5.

Joiner, T. E., Schmidt, K. L., & Barnett, J. (1996). Size, Detail and Line Heaviness in Children's Drawings as Correlates of Emotional Distress, (More) Negative Evidence. Journal of Personality Assessment, 67(1), 127 – 141.

Kasuya, M., Sawaki, Y., Ohno, Y., & Ueda, M. (2000). Psychological Study of Cleft Palate Children with or Without Cleft Lip by Kinetic Family Drawing. Journal of Cranio-Maxillofacial Surgery. 28(6), 373-379.

Lev-Wiesel, R. & Liraz, R. (2007). Drawings Vs. Narratives, Drawing As A Tool To Encourage Verbalization In Children Whose Fathers Are Drug Abusers. Clinical Child Psychology and Psychiatry, 12(1), 65-75.

Lowenfeld, V. (1947). Creative and Mental Growth. New York: Macmillan.

Lukash, F.N. (2002). Children's Art as a Helpful Index of Anxiety and Self-Esteem with Plastic Surgery. Plastic and Reconstructive Surgery, 109(6), 1777-1786.

Machover, K. (1949). Personality Projection in the Drawing of the Human Figure. Springfield, IL: Charles C Thomas.

Malchiodi, C.A. (1998). Understanding Children's Drawings. Guilford Press: New York.

Massimo, L.M. & Zarri, D.A., (2006). Drawings, A Narrative Approach For Children With Cancer. Annals of the New York Academy of Sciences, 1089(1), 16-23.

Metzl, E.S. (2008). Systematic Analysis of Art Therapy Research Published In Art Therapy: Journal of AATA Between 1987 And 2004. The Arts in Psychotherapy 35, 60-73.

Mullis, R.L., Mullis, A.K. & Kerchoff, N. (1992). The Effect of Leukaemia and Its Treatment on Self-Esteem of School Age Children. Maternal-Child Nursing Journal, 20(3-4), 155-165.

O'Malley, M.E. & MacNamara, S.T. (1993). Children's Drawings: A Preoperative Assessment Tool. AORN Journal, 57(5), 1074-1089.

Owens, J.A., Spirito, A., Mcguinn, M., Nobile, C. (2000). Sleep Habits and Sleep Disturbance in Elementary School-Aged Children. Developmental and Behavioral Pediatrics, 21, 27-36.

Packman, W. L., Crittenden, M. R., Fischer, J. B. R., Cowan, M. J., Long, J. K., Gruenert, C., Schaeffer, E., And Bongar, B. (1998). The Kinetic Family Drawing With Donor and Nondonor Siblings of Pediatric Bone Marrow Transplant Patients. Art Therapy, Journal of the American Art Therapy Association, 15(3), 177-84.

Palmer, L., Farrar, A.R., Valle, M., Ghahary, N., Panella, M., & Degraw D. (2000). An Investigation of the Clinical Use of the House-Tree-Person Projective Drawings in the Psychological Evaluation of Child Sexual Abuse. Child Maltreatment, 5(2), 169-175.

Paavonen EJ, Aronen ET, Moilanen I Et Al. (2000). Sleep Problems of School-Aged Children: A Complementary View. Acta Paediatrica, 89, 223-228.

Pearson, P. (2001). Towards A Theory of Children's Drawing as Social Practice. Studies in Art Education, 42(4), 348-365.

Piko, B.F. & Bak, J. (2006). Children's Perceptions of Health and Illness: Images and Lay Concepts in Preadolescence. Health Education Research Theory and Practice, 21(5), 643-653.

Rae, W.A. (1991). Analyzing Drawings Of Children Who Are Physically Ill And Hospitalized, Using The Ipsative Method. Child Health Care. 20, 198–207.

Rollins, J.A. (2005). Tell Me About It, Drawing As A Communication Tool For Children With Cancer. Journal of Pediatric Oncology Nursing, 22(4), 203-221.

Rubin, J.A. (1999). Art Therapy An Introduction. Brunner Mazel: Taylor and Francis Group.

Sadeh, A. (1994). Assessment of Intervention for Infant Night Waking: Parental Reports and Activity-Based Home Monitoring. Journal of Consulting and Clinical Psychology, 62, 63-68.

Stafstrom, C.E., Rostasy, K., & Minster A. (2002). The Usefulness of Children's Drawings in the Diagnosis of Headache. Pediatrics, 109(3), 460–472.

Stafstrom, C.E. & Havlena, J. (2003). Seizure Drawings, Insight Into the Self-Image of Children with Epilepsy. Epilepsy and Behaviour, 4(1), 43-56.

Stafstrom, C.E., (2005). Using Artwork to Better Understand Patients with Neurologic Disorders. Epilepsy and Behavior, 6, 113–114.

Stafstrom, C.E., Goldenholz, S.R. & Dulli, D.A. (2005). Serial Headache Drawings by Children with Migraine: Correlation with Clinical Headache Status. Journal of Child Neurology, 20, 809-813.

Stefanatou A. & Bowler, D. (1997). Depiction of Pain in the Self-Drawings of Children with Sickle Cell Disease. Child: Care, Health and Development, 23(2), 135-155.

Sturner, R.A., Rothbaum, F., Visintainer, M., & Wolfer, J. (1980). The Effects of Stress on Children's Human Figure Drawings. Journal of Clinical Psychology, 36, 324-331.

Tharinger, D.J. & Stark, K. (1990). A Qualitative Versus Quantitative Approach to Evaluating The. Draw-A-Person and Kinetic Family Drawing: A Study of Mood- And Anxiety Disordered Children. Journal of Consulting and Clinical Psychology 2(4), 365-375.

Thomas, G.V. & Gray, R. (1992) Children's Drawings of Topics Differing in Emotional Significance-Effects on Placement Relative to a Self-Drawing: A Research Note. Journal of Clinical Psychology and Psychiatry 33(6), 1097-1104.

Wallace, J., Yorgin, P. D., Carolan, R., Moore, H., Sanchez, J., Billson, A., Yorgin, L., Major, C., Granucci, L., Alexander, S., And Arrington, D. (2004). The Use Of Art Therapy To Detect Depression And Post Traumatic Stress Disorder In Pediatric And Young Adult Renal Transplant Recipients. Pediatric Transplant, 8, 52–59.

Wesson, M., & Salmon, K. (2001). Drawing and Showing, Helping Children to Report Emotionally Laden Events. Applied Cognitive Psychology, 15, 301-320.

White, C.R., Wallace, J., & Huffman, L.C. (2004). Use Of Drawings To Identify Thought Impairment Among Students With Emotional And Behavioral Disorders, An Exploratory Study. Art Therapy Journal of the American Art Therapy Association, 21(4), 210-218.

Winnicott, D. (1971). Playing and Reality. New York: Basic Books.

Wysocki, B.A. & Whitney, E. (1965). Body Image of Crippled Children As Seen In Draw-A-Person Test Behavior. Perceptual and Motor Skills. 21(2), 499-504.

**LIST OF TABLES AND FIGURES (Chapter 1)**

**Table One: Quality Criteria**

| | Quality Question | Explanation |
|---|---|---|
| **Objectives** | **1. Was the research question sufficiently described?** | Adequate–Clear research question with clear specification of hypotheses.<br><br>Partial–Statement of research question, but objectives/hypotheses less clear.<br><br>Inadequate–Vague statement of objective with no specification of objectives/hypotheses. |
| | | |
| **Participants** | **2. Were the sample demographics sufficiently described?** | Adequate–Full description of demographic characteristics of sample (age, gender, SES). More than just age & sex are required.<br><br>Partial–Provision of some demographic &/or relevant clinical characteristics, but failure to address all potentially relevant.<br><br>Inadequate–Provision of extremely limited description of demographic &/or clinical characteristics. |
| | **3. Is the sample representative of the population?** | Adequate–Clear description of recruitment process with a clear description of the source of the population recruited. |

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| | | Partial–More limited description requiring subjective decision by the reviewer about the extent to which the sample represents the population.<br><br>Inadequate–Study provides minimal description &/or demonstrates potential for sample to be unrepresentative of the population. |
| | **4. Are participants/groups comparable at baseline?** | Adequate–Study measures & reports prognostic or baseline characteristics & reviewer is able to confirm that sample is prognostically comparable through evidence of adequate adjustment for potential confounding variables.<br><br>Partial-Study measures & reports on some prognostic or baseline characteristics & reviewer is able confirm that sample are prognostically comparable on basis of these limited variables. No evidence of adjustment.<br><br>Inadequate–Study measures & reports only limited prognostic or baseline characteristics &/or reviewer determines that sample is not prognostically comparable. |
| | **5. Were attrition of participants & reasons for attrition clearly recorded?** | Adequate–Numbers of participants that dropped out over the course of the research study are clearly stated & reasons for attrition clearly described OR adequately controlled for through statistical analysis. |

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| | | Partial–Numbers of participants that dropped out over the course of the research study are stated although less clearly. Reasons for this attrition are not clearly described.<br><br>Inadequate-Numbers of participants that dropped out over the course of the research study are not clearly stated nor are the reasons for this attrition clearly described OR not adequately controlled for through statistical analysis. |
| | **6. Is it clearly described that controls are non-cases?** | Adequate–Diagnosis of the clinical population is well documented & is excluded in the control population.<br><br>Partial–Diagnosis of the clinical population is well documented however it was not possible to exclude clinical diagnosis from control population.<br><br>Inadequate–Diagnosis of the clinical population is not clearly stated & therefore it is not possible to reliably ascertain that controls are non-cases. |
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| **Measurement** | **7. Are measurement tools supported by psychometric evidence of validity,** | Adequate-Clear evidence reported to support the adequacy of the psychometric properties of the additional tools employed e.g. reference to published psychometric evaluations/psychometric assessments conducted within the study itself. |

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| | **reliability within the population?** | Partial-Some partial evidence, but not available for all measures &/or evidence of lower reliability, validity for some of the measures.<br><br>Inadequate-Failure to report psychometric properties or only limited justification for use &/or evidence of measures being used. |
| | **8. Are the drawing instructions, materials & collection methods well described?** | Adequate-A clear & concise description of the drawing instructions, materials & collection methods is available. The detail of which is such that it is replicable in future studies<br><br>Partial-Some mention of the drawing instructions, materials or collection methods is made. The detail of which is such that may not be replicable in future studies.<br><br>Inadequate-No description of the drawing instructions, materials or collection methods is made & the study would therefore not be replicable. |
| | **9. Were the marking criteria for the children's drawings adequate in both the way it was delivered & described?** | Adequate-A clear & concise description of the marking criteria employed in relation to the children's drawings. The detail of the marking criteria is such that it is replicable in future studies<br><br>Partial-Some mention of the marking criteria for children's drawings is made. The detail of the |

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| | | marking criteria is such that may not be replicable in future studies.<br>Inadequate-No description of the marking criteria employed in relation to the children's drawings is available & the study would therefore not be replicable. |
| | **10. Have the therapists been appropriately trained in marking the drawings?** | Adequate-Documentation of explicit training of raters.<br><br>Partial-The general level of therapist training is reported & is adequate (professionally qualified) but there is no mention of explicit training with regards to marking the drawings.<br><br>Inadequate-No convincing evidence that the therapists have an adequate level of training (e.g. graduate level) or explicit training in marking children's drawings. |
| | **11. Were the drawings marked by more than one clinician?** | Adequate-Drawings marked by more than one experienced clinician & inter rater reliability stated.<br><br>Partial-Drawings marked by more than one experienced clinician, however, inter rater reliability is not stated.<br><br>Inadequate-Drawings marked by only one clinician/an inexperienced member of staff. |
| | **12. If blinding of investigators was possible, was it** | Adequate–Measures administered by individuals not involved in the assessment processes OR clear description of adequate blinding of the investigators. |

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| | **reported?** | Inadequate–Measures administered by individuals who are involved in the provision of the assessment process OR are unblinded colleagues of clinician. |
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| **Design** | **13. Has the study utilised the most robust design appropriate for the specific research question?** | Adequate–The most appropriate design was utilised.<br><br>Inadequate–A more appropriate design could have been employed.<br><br>This item should be considered in relation to the following designs, presented in order of decreasing robustness:<br><br>Level 1 - Experimental studies with randomisation.<br>Level 2 - Quasi-experimental studies, without randomisation.<br>Level 3 - Controlled observational studies.<br>Level 3a - Cohort studies, prospective (longitudinal).<br>Level 3b - Cohort studies, retrospective (longitudinal).<br>Level 3c - Case control studies.<br>Level 4 - Observational studies without control groups (cross sectional).<br>Level 5 - Expert opinion. |

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| | **14. If participants were randomly selected, was the method of random selection sufficiently well described?** | Adequate–Description of randomisation well described<br><br>Inadequate –The authors were vague regarding the randomization process/did not discuss the process at all.<br><br>N / A (if participants were not randomly allocated) |
| | **15. Was the process of randomisation robust?** | Adequate–Yes, for example use of computer-generated random number or random number tables<br><br>Inadequate-No, for example use of case record numbers, birth dates, week days etc.<br><br>N / A (if participants were not randomised) |
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| **Analysis** | **16. Was there a sample size justification before the study?** | Adequate – power calculation reported & appropriately calculated.<br><br>Inadequate – failure to provide any justification for sample size. |
| | **17. Were statistical analyses appropriate?** | Adequate – Study uses appropriate analysis & provides evidence that data & design meet with the conditions required for use of any specific statistical analysis &/or a statistician was employed to conduct the analysis. |

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| | | Partial – Study employs statistical analysis although does not provide any explanation or justification for their use.<br><br>Inadequate – Study uses an analysis which is not appropriate for research question & for which it is clear that the design &/or data violate the conditions/assumptions of use OR no statistical analysis is employed at all. |
| | **18. Were statistical tests stated?** | Adequate – all statistical tests were stated<br><br>Partial – some statistical tests were stated<br><br>Inadequate – no statistical tests were stated |
| | **19. Does the study reports effect sizes, exact p values or confidence intervals for each statistical test?** | Adequate – Study reports effect sizes, exact p values or confidence intervals for each statistical test<br><br>Partial – Study has reported effect sizes, exact p values or confidence intervals for some, but not all, of the statistical tests.<br><br>Inadequate – Study fails to reports effect sizes, effect sizes, exact p values or confidence intervals for any of the statistical tests. |

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| | **20. Were drop-outs included in the analysis?** | Adequate – Study includes drop-outs in the analysis.<br><br>Inadequate – Study fails to include drop outs in the analysis stages, ignoring them altogether.<br><br>N / A (if there were no drop outs to be considered) |
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| **Discussion** | **21. Do the findings support the conclusions?** | Adequate – Yes. The authors make direct links between the results & discussion sections.<br><br>Partial – To some extent, but some evidence of over-extension or over-generalisation of results based on actual findings.<br><br>Inadequate – No. The study fails to draw coherent & accurate links between the results & conclusions drawn. |
| | **22. Does the study relate the results directly to the original research question & hypotheses?** | Adequate–Authors explicitly answer their research questions/hypotheses.<br><br>Partial–Authors make some attempt to link their research questions/hypotheses to their findings.<br><br>Inadequate–Authors make no attempt to link their research questions/hypotheses to their findings. |

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| | **23. Does the study make recommendations for clinical practice based on the findings?** | Adequate–Specific & relevant recommendations for clinical practice, or future clinical research, are made.<br><br>Partial–Some generalised recommendations with no specific indication of potential limitations or required conditions.<br><br>Inadequate–No recommendations for clinical practice, or future clinical research. |

**Table Two: Papers Excluded From Review**

| Reason for Exclusion | No. Excluded | References |
|---|---|---|
| Descriptive / Theoretical / Review study with no manipulation of data. | 2 | Clements, Benasutti and Henry (2001); O'Malley, M.E. and McNamara, S.T. (1993) |
| Age range of participants out with the inclusion criteria specified for this review. | 2 | Wallace *et al.* (2004); Feyh and Holmes, (1994) |
| N<10 | 1 | Packman *et al.* (1998) |
| Follow up study | 1 | Carroll and Ryan Wenger (1999) |
| Non-clinical setting/population | 4 | Driessnack, (2006); Wesson and Salmon (2001); Gross and Hayne (1998); Lev-Wiesel, R. and Liraz, R. (2007) |

## Table Three: Summary of Included Studies

| Author | Year | Quality | Design | Method-ology | N | Age (Years) | Additional Outcome Measures | Results | Authors Conclusions | Limitations |
|---|---|---|---|---|---|---|---|---|---|---|
| **White et al.** | 2004 | High | Cross Section | Projective Drawing | N=53 (47 male) | 8-16 (mean 12.7) | Child Behaviour Checklist (CBCL)<br><br>Child & Adolescent Functional Assessment Scale (CAFAS) | Significant group differences for ratings on 5 of the 14 FEATS subscales, with most profound differences in ratings on the Problem-Solving subscale<br><br>The FEATS was unable to differentiate diagnosis between disorders | Art assessments offer an additional, non threatening form of assessment to complement & reinforce other types of assessments<br><br>Results validate the use of children's art forms as a basis for clinical insight & suggest that children's drawings can be a helpful tool for diagnosis, treatment, & evaluation purposes | Small sample size<br><br>Only 6 females included |
| **Palmer et al.** | 2000 | High | Case Control | Projective Drawing | N=129 (41 male) | 4-17 (mean 9.75) | History of Victimisation Questionnaire (clinical group only) | IRR established at a moderate level despite rater training<br><br>Neither the HTP total score nor any of the drawing predictors were significant | HTP drawings should not be used as a means of identifying or confirming a history of child sexual abuse | Lack of control for confounding variables<br><br>Use of subjective measure to categorise children as sexually |

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| | | | | | | | | | | abused<br><br>Control group recruited from church. |
| **Rollins** | 2005 | Moderate | Cross Section | Projective Drawings & Free Drawings | N=22 (13 male) | 7-18 (estimated mean 12) | Interview & observation with child | 77% of participants used drawing to launch into discussions beyond the image drawn<br><br>Two major themes 'negotiating the road map' & 'missing out' were noted<br><br>PPAT drawings indicated that the majority of children had adequate coping<br><br>Children, regardless culture, respond to the childhood cancer experience in a similar manner. | The use of drawing enhanced communication through direct visual expression &/or through verbal expression. | Small sample size<br><br>Wide age range employed & mostly in the very young or very oldest categories<br><br>Not clear who conducted the drawings & who marked them. |

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| **Joiner et al.** | 1996 | High | Cross Section | Projective Drawing | N=80 (53 male) | 6-16 (median 10.7) | Child Depression Inventory<br><br>Revised Children's Manifest Anxiety Scale<br><br>Positive & Negative Affect Schedule<br><br>Robertsons Apperception Test<br><br>Robertsons Depression & Anxiety Scales & | Detail & line heaviness were not significantly correlated with any of the outcome measures<br><br>Significant relationship between drawing size & the Robertson's Anxiety scale, with larger drawings being associated with more anxiety<br><br>No relationship between age & drawing indicators | Size, detail & line heaviness were not valid or reliable indicators of emotional distress<br><br>Drawings are useful in rapport building but are not useful measurement tools | Sample consisted of largely older girls & younger boys<br><br>Absence of a control group |
| **Chantler et al.** | 1993 | Low | Case control | Projective Drawing | N=102 (58 male) | 6-12 | Louisville Behaviour Checklist | 75.49% correctly classified using the LBC & 62.75% correctly classified using Sexual Problems Subscale score<br><br>Koppitz Emotional Indicators predicted group membership 43.14% of the time<br><br>77.45% correct classification using a combination of | Scores on all measures differed significantly between groups. Use of scores to classify individual children as sexually abused or non-abused produced substantial misclassification rates<br><br>The rate of misclassification may still remain too high to be acceptable for use in | Raters not blinded<br><br>Retrospective & subjective classifications of abuse<br><br>Not possible to rule out abuse in control groups |

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| | | | | | | | | Louisville Factor Scores & Koppitz Flag Item scores | clinical practice | |
| **Mullis et al.** | 1992 | moderate | Case control | Projective Drawing | N=63 (27 male) | 6-11 | Coopersmith Self Esteem Inventory | Children with leukaemia did not differ in self-esteem from healthy children except on the school-academics subscale of the SEI<br><br>KFD-R subscales revealed significant differences between the groups for emotional tone. | Children with cancer require assistance to make the transition to school after their diagnosis & subsequent treatment. | Small clinical group N=13 |
| **Sturner et al.** | 1980 | Moderate | Case Control | Projective Drawing | N=68 (37 male) | 4-12 (mean 6.8) | Observation<br><br>Pulse measurements | Significant increase in the number of emotional indicators only in the blood test group who was unprepared, this effect remained when adjusted for mental age score of drawing<br><br>Emotional indicators correlated with pulse taken at the time of the venipuncture | Emotional indicators in children's drawings are induced by stressful experiences<br><br>Human figure drawings are not a specific diagnostic instrument<br><br>Emotional indictors in children's drawings are only loosely correlated with | Authors could have implemented a randomised controlled design<br><br>Poor description of the sample<br><br>Subjective measure of coping behaviour |

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| | | | | | | | | | other indices of anxiety. | |
| **Tharinger & Stark** | 1990 | Moderate | Case control | Projective Drawing | N= 52 (11 male) | 9- 14 (mean 11.75) | Children's Depression Inventory (CDI)<br><br>Revised Children's Manifest Anxiety Scale (RCMAS),<br><br>Schedule for Affective Disorders & Schizophrenia for School-Age Children (KSADS)<br><br>Self-Report Measure of Family Functioning (SRMFF) | Qualitative scoring of the DAP differentiated children with mood disorders & mood/anxiety disorders, but not children with only anxiety disorders<br><br>Qualitative scoring of the KFD differentiated children with mood disorders, but not mood/anxiety disorders<br><br>Qualitative scoring of the DAP & KFD were significantly correlated with self-concept & aspects of family functioning. | An integrated, holistic approach to scoring projective drawings can be a useful adjunct in assessing children with internalising disorders | Small sample size<br><br>Only 11 males in sample |
| **Kasuya et al.** | 2000 | Poor | Case control | Projective Drawing | N= 160 (83 male) | 7-9 | None | Significant differences in the regions in which girls with cleft palate & boys with cleft lip & palate drew their self images | In Japan cleft children, felt anxiety & fear towards their family members, & rarely viewed their homes as restful places | No objective measures of fear, anxiety or familial relationships |

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| | | | | | | | | Significantly fewer cleft palate only boys drew their father as the largest figure when compared to normal boys. | Children with cleft lip/palate perceived major psychological distances from their parents & unique dynamic relations in their home. | |
| **Wysocki & Whitney** | 1965 | Poor | Case control | Projective Drawing | N=100 (33 male) | 6-11 (mean 9) | None | The two groups differed significantly on size of figure, placement of figure, shading, pressure & paper rotation | Physically disabled & typically developing children differ significantly in the areas of inferiority, anxiety & aggression | Limited & poorly detailed description of the methodology, procedure, analysis & discussion<br><br>Did not employ objective measures of self esteem, anxiety or aggression |
| **Stefanatou & Bowler** | 1997 | Low | Cross Section | Free Drawing | N=30 (males: female ratio unknown) | 5-13 (mean 9.3) | Interview with parent & child | No significant difference in the number of emotional indicators in the drawings of the pain & no-pain groups | The self-drawing can give an initial & illustrative picture of the child's psychological & physical state during illness & pain<br><br>Caution & a complete case history are essential in making inferences from | Small sample size<br><br>No Caucasian participants<br><br>No objective measure of pain employed<br><br>Blinding of raters is |

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| | | | | | | | | | drawings | not reported. |
| **Stafstrom & Havlena** | 2003 | Moderate | Cross section | Free Drawing | N=105 (43 male) | 5-18 (mean 12.3) | Medical interview | Two themes emerged including distortion of body shape/size & suggestions of depression<br><br>The drawings of human figures were less developed than expected for chronological age<br><br>Seizure type or syndrome were able to be predicted from some of the children's drawings | Drawings are a powerful & useful method to examine the self-concept of children with epilepsy & gain insight into their feelings & coping mechanisms | Authors did not utilise formal statistical analysis<br><br>Study was not blinded or controlled<br><br>No objective measure of depression |
| **Stafstrom et al.** | 2002 | Moderate | Cross Section | Free Drawing | N=226 (105 male) | 4-19 (mean 11.4) | Clinical history<br><br>Physical examination of the child | Children's headache drawings have a sensitivity of approximately 93% & a specificity of almost 83% when compared with the clinical diagnosis<br><br>The positive & negative predictive values were 87.1% | Children's headache drawings are a simple, inexpensive aid in the diagnosis of headache type<br><br>Children's headache drawings have a very high sensitivity, specificity, & predictive value for | Limited availability of demographic details<br><br>No formal statistical analysis |

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| | | | | | | | | & 90.6% | migraine versus non-migraine headaches<br><br>Drawings are useful with children of all ages<br><br>Drawing is encouraged in the evaluation of any child with a headache, as an adjunct to the clinical history & physical examination. | |
| **Horstman & Bradding** | 2002 | Poor | Case control | Free Drawing | N=99 (male: female ratio unknown) | 6-10 | A short semi-structured interview, which used artists' drawings as a focus. | Feelings of sadness & frustration dominated the children's drawings, & fear & anxiety were commonly expressed by older children<br><br>The environment had a prominent place in the drawings, especially those of older children<br><br>Humour was identified as a highly desirable way of | The 'draw & write' technique is an excellent tool for obtaining children's perceptions & views<br><br>A better understanding of children's views of hospitals & the people in them was gained | No qualitative analysis appears to have been conducted, thus the conclusions are largely descriptive in nature |

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| | | | | | | | | communication<br><br>Children desire accurate, honest information about their treatment, diagnosis & prognosis | | |
| **Massimo & Zarri** | 2006 | Poor | Cross Section | Free Drawing | N=50 (27 male) | 4-14 (median 8) | None | Interesting data emerged from the longitudinal study as each child made several paintings over the course of the year, but do not report these findings<br><br>A greater understanding & appreciation of the improvement in the child's feelings was gained through the children's drawings, however again no data is reported | Drawings cannot be the sole indicator of the child's status, but must be assessed within a more global study<br><br>Taking art therapy into consideration & including it in the total care of children affected either by cancer or by other severe diseases that require long periods of hospital treatment | Write up of this study was poorly organised & unclear rendering it difficult to follow<br><br>Research design was not described & there appeared to be no formal analysis of the results only descriptive comments by the authors |

**Table Four: Summary of Methodological and Design Features For Consideration in Future Studies**

| **Recommendations For Future Studies Exploring The Use Of Children's Drawings In Health Care Research** |
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| 1. Inclusion of a power calculation to assist with sample size.<br>2. Employing a reliable and valid outcome measure of the mental health concept(s) they wish to investigate.<br>3. Inclusion of potential confounding variables such as age.<br>4. Use two different researchers for the data collection and rating stages. Where this is not possible however, state the dual role of the researcher in the write up.<br>5. The write up of the study should be clear, concise and easy to follow allowing for future replication. The author may wish to take lead from published scientific papers which present a good framework for writing up studies in this fashion.<br>6. Where the author does not have the necessary expertise or skills to conduct an appropriate statistical analysis, recruitment of a statistician is encouraged. |

# CHAPTER TWO

## MAJOR RESEARCH PROJECT PAPER

## Identifying Sleep Disturbance in Children: Insights Using Children's Drawings

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Prepared in accordance to requirements for submission to *SLEEP*

(Appendix 2.2)

## 1. Abstract

**Study Objectives:** To investigate the usefulness of employing children's drawings in identifying sleep disturbance.

**Setting and Design:** This study was conducted with families in school and home environments. The study employed a mixed group design, with two groups of children; a control sample of children with a normal sleep pattern, and a clinical sample of children with a disturbed sleep pattern.

**Participants** 87 children aged between 4 and 11 years of age, with a mean of 7.0 years (SD 2.3), were recruited.

**Measurements:** Participants completed two drawings in a counterbalanced order; one of a bed and one of a dining table, and 5 days of actigraphy. Caregivers completed the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10), Hospital Anxiety and Depression Scale (HADS), and Strengths and Difficulties Questionnaire (SDQ). A clinical sleep interview was also conducted with the caregiver of the children recruited.

**Results:** Children were grouped according to caregiver report. Children with disturbed sleep patterns, reported by proxy, did not draw pictures of beds significantly differently with regards to size or colour than their normal sleeping counterparts, reported by proxy. In addition, there were no within group differences in relation to bed and table drawings in the disturbed sleepers groups, reported by proxy. Furthermore, children with disturbed sleep patterns, reported by proxy, had similar behaviour to children in the normal sleep group, their caregivers did not have significantly different attitudes and beliefs about sleep and caregiver mental health did not differ significantly either. Secondary analysis, based on objective and subjective measures of sleep disturbance, indicated similar results; however, a significant difference between anxiety levels of caregivers of children with disturbed sleep patterns according to actigraphy and parental report was noted.

**Conclusions:** The current study did not support the use of children's drawings as a means of identifying sleep disturbance in children aged between 4 and 11 years of age.

**Keywords:** Actigraphy, child(ren), paediatric, pediatric, sleep, drawing, art work.

## 2. Introduction

Due to an under-representation of children's sleep disorder medicine from clinical and research practice, the prevalence of sleep disorders in any age group is speculative. Conservative estimates suggest 20-30% of children, during the first three years of life, experience sleep disturbance. [1-5] Less is known about children of school age. Some studies report a drop in the occurrence of sleep disturbance to around 1-4% in this population,[6] while others have reported a similar prevalence to younger children.[7]

Typically, sleep disturbance is mild and transient in nature; however, for a minority these difficulties can become more extreme, of longer duration and have considerable implications for the child, caregivers and the family.[8-9]

Research has shown that sleep disturbance can have implications for physical growth,[10] produce a range of cognitive impairments,[11-12] and adversely affect behaviour, attention and mood.[1,13] In addition, the effects of children's sleep disturbance are apparent within the family unit itself. With sleep deprivation in parents, parental depression, stress, marital discord and negative parent-child interactions correlating highly with sleep disturbance in children.[13-16]

Report by proxy, usually the primary caregiver, is typically employed in the assessment process for childhood sleep disturbance, as children, particularly younger ones, struggle to verbally express their difficulties due to their limited abilities in comprehension, linguistic skills, and acquiescence bias. Despite the informative value of proxy reports, over-reliance on this data remains to be one of the major limitations in the field of child sleep research.

Caregiver reports on their child's sleep suffer from a number of serious shortcomings as caregiver's perceptions of their child's sleep patterns may be biased by factors unrelated to their child's actual sleep patterns.[17] Such factors may include the child's temperament and behaviour,[18-20] the caregivers' attitudes and beliefs about sleep,[21] as well as poor metal health.[5,22-23]

Enabling children to participate using artwork as a means of communication offers a novel solution, being both cost effective yet familiar, and has recently gained favour in the research arena. Whilst objective tools, such as questionnaires, may remain to be popular amongst researchers and clinicians' alike, few objective measurement tools are available which elicit children's voices, particularly those of young children whose cognitive abilities and command of language remains limited. Drawing, however, is a natural and spontaneous activity that children engage in and one that is appropriately suited to those unable to fully articulate their beliefs and experiences using spoken or written word. Such subjective activities, therefore, may be more accessible to and useful in working with younger children whose ability to engage with objective measures and meet the demands such task place on them is comprised by their cognitive, motor and verbal development. The use of children's art work as a clinical tool is particularly appealing due to its simplicity and popularity amongst children of all ages as well as the availability of materials and ease of administration of such a task across all age groups. Moreover, the enjoyment that children derive from participating in such a non-threatening and empowering activity[24-25] makes this tool particularly appealing in comparison to its objective counterparts.

Universally children's drawings tend to follow a predictable pattern of development and progression. An understanding of this process and knowledge of normal developmental trajectory are essential for understanding and interpreting children's drawings. Lowenfeld[26] built on the foundations laid by Burt amongst others in the early 20th century, promoting theories and a framework of the development of children's drawings in combination with development of cognitive abilities. A framework, similar in nature to Lowenfeld's work was offered by Malchiodi[27], as show in Table 1 shown below.

****Insert Table 1 Here****

Children's drawings develop and are shaped within a cultural, familial and social context. Children's artistic development therefore is not just a vertical process but is impacted at many levels, including sociocultural, motor and cognitive factors. Progression or regressing in drawing ability, therefore, may be the result of any

one or a combination of influences. Of particular note, children's acquisition of a colour language, specific colour preferences and categorisation of colours have been shown to vary across cultures,[28-30] as has the relationship between colour and affect.[31] Interestingly, however, the use of darker colours to depict topics and events about which the artist feels negatively appears to be reasonably consistent across cultures.[32] Research into sociocultural influences of children's drawings remains in its infancy, and further exploration of this area is required in order to fully appreciate the important influence these factors have on children's artistic development.

To date children's drawings have been applied in a number of clinical populations.[33-37] Despite their growing popularity children's drawings have not been employed as an aid in the identification of sleep problems to date. Such a technique could be used to support a clinical diagnosis and guide therapeutic decision making.

There are several indicators that have received particular attention throughout children's artwork literature, most notably size and colour.

Alterations in the size of significant objects in children's drawings is thought to be a common form of emotional expression, designed to call attention to positive topics, while a decrease in size is designed to act as a defence mechanism and is therefore representative of a negative or threatening object. Whilst recent studies have been relatively consistent in the findings for drawings of positively laden objects and an increase in size,[38-40] the evidence in relation to negatively laden objects is mixed.[39,41-43] Therefore, whilst the exaggeration effect is an important one to consider, its direction continues to be disputed.[44]

Colour choice and its relation to emotion have frequently been debated throughout the literature. Whilst some argue that colour provides a means through which emotion can be revealed, others attest that colour is largely a personal choice and thus entirely subjective.[45-46] Some groups of children have been shown to be extremely limited in the number of colours they employ in their drawings. Research by Malchiodi[47] and Gantt and Tabone[48] investigating sexual abuse and

depression, reported that their samples utilised only one or two colours in their drawings. Furthermore, Gregorian and colleagues[49] when studying a group of children who had experienced a natural disaster noted their restricted use of colour. The therapists hypothesised that these children were expressing their psychological pain through colour. In a large study by Burkitt et al.[39] looking at children's use of colour in their drawings the authors reported that black was the most frequently chosen colour for colouring in negatively characterised figures, while primary and secondary colours were predominantly selected for neutral and positively characterised figures.

Rae[50] offers some important insights into the subtle issues involved in the process of presenting the task and obtaining drawings from young children. The author suggests that in the first instance it is imperative to establish rapport with the child and encouragement should be offered for enthusiasm and effort rather than the quality of the work produced, with the entire process taking place in an environment largely free of distractions. It was this authors experience that whilst children met the task with enthusiasm they often asked many questions regarding the drawing itself and how they should be completed. When praise and support was offered for the effort put into the task rather than the produced drawing itself children's enthusiasm grew and many children created a number of drawings over and above those requested of them. With regards to instructions Rae advocates that either concrete or abstract instructions are appropriate depending on the requirements of the researcher, although the researcher must be open and honest with the child regarding their purpose and ultimate use for the drawing. A cautionary note is required, therefore, as it is important to be aware that children's affect towards the topic at hand and their motivation for completing the task may be manipulated through the instructions and direction presented by the researcher. Ultimately however, regardless of the process that the researcher employs it is important that this procedure is standardised and adopted for all of the children.

Given that the use of specific drawing features such as size and colour requires further systematic investigation and that drawings have not been employed to investigate children with sleep disturbance to date, a study of this nature is warranted.

## 3. Methods

### 3.1 Study Aims

The aim of this study was to investigate the usefulness of employing children's drawings in the identification of sleep disturbance.

### 3.2 Hypotheses

On the basis of the existing literature a number of hypotheses were proposed:

1. The 'sleep' drawings of children with a normal sleep pattern, by proxy report, will differ in size and colour from the 'sleep' drawings of those children with a disturbed sleep pattern, by proxy report.
2. The 'furniture' drawings of children with a normal sleep pattern, by proxy report, will not differ in size and colour from the 'furniture' drawings of those children with a disturbed sleep pattern, by proxy report.
3. The 'sleep' and 'furniture' drawings in the disturbed sleep pattern, by proxy report, group will differ in size and colour.
4. The scores of the children with a disturbed sleep pattern, by proxy report, will differ from those with a normal sleep pattern, by proxy report, on the Strengths and Difficulties Questionnaire (SDQ).
5. The scores of caregivers of the children with a disturbed sleep pattern, by proxy report, will differ from those with a normal sleep pattern on the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10).
6. The scores of caregivers of the children with a disturbed sleep pattern, by proxy report, will differ from those with a normal sleep pattern, by proxy report, on the Hospital Anxiety and Depression Scale (HADS).

### 3.3 Participants

All participants were recruited using advertisement posters. In total 96 families expressed an interest in taking part, however, 11 (12%) of these did not participate, either through declining to take part or due to non contact following receiving the information sheet, giving an overall participation rate of 90.6%.

### 3.4 Inclusion and Exclusion Criteria

Children were included in the study if they were aged between 4 and 11 years and spoke English as their main language. Children with severe cognitive or developmental delays or those with physical handicaps, precluding them from drawing, were excluded.

### 3.5 Determination of Sample Size

Sample size was determined through an a-priori power calculation.[51] To date no studies have employed a drawing methodology in the paediatric sleep disorder population, therefore a medium effect size was adopted (f=0.5). With alpha ($\alpha$) and beta ($\beta$) levels set at 0.05 and 0.6 respectively, a sample size of 82 children was required.

### 3.6 Materials

Six measures were employed including a clinical sleep history interview, actigraphy data, children's drawings, the Hospital Anxiety and Depression Scale (HADS), the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10) and the Strengths and Difficulties Questionnaire (SDQ-Caregiver).

#### *3.6.1 Clinical Sleep History Interview*

A semi-structured clinical interview using Morin and Espie's[52] Clinical Sleep History Interview as a template was conducted with caregivers. Interviews were conducted by the lead researcher and a subjective diagnosis was made based on the information gathered.

#### *3.6.2 Actigraphy*

Activity based sleep monitoring, more commonly referred to as actigraphy, has recently established itself as a reliable method to investigate sleep-wake patterns and has been shown to effectively differentiate between normal and disturbed sleep-wake patterns of children and infants.[17,53] An actigraph monitoring device contains a small computerised movement detector which records periods of activity. The actigraph translates these periods of motion into a numeric representation. Thus, the device offers a way to record a child's sleep-wake cycle,

yet does not affect the child's natural sleep environment. Validation studies comparing actigraphy to polysomnography, considered to be the 'gold standard' in sleep disorder research, have reported high concordance rates in both general and clinical populations.[17,53] For the purposes of this study AW7 Cambridge Neurotechnology actiwatches were used and were worn on the non-dominant wrist or ankle for a minimum period of five nights. Epoch lengths were set at one minute.

### *3.6.3 Strengths and Difficulties Questionnaire (SDQ)*

The SDQ is a brief behavioural screening questionnaire for 3-16 year olds.[54] The SDQ investigates 25 attributes divided between five scales including emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and prosocial behaviour. For each of the five scales scores can range from 0 to 10. The Total Difficulties Score is calculated using all sub-scales with the exception of the prosocial scale. The overall score ranges from 0 to 40 with higher scores indicating greater difficulty. The psychometric properties of the SDQ are well supported throughout the literature, in numerous cultural contexts and healthy as well as clinical populations.[55-56] For the purposes of this study only the caregiver report form was employed. For the present study the reliability of this measure was computed to be 0.54, therefore, results based upon this should be viewed cautiously.

### *3.6.4 Hospital Anxiety and Depression Scale (HADS)*

This questionnaire was selected as a brief measure of caregiver mental health. The HADS is a self-report questionnaire consisting of 14 questions, which looks at symptoms of anxiety and depression.[457] Possible scores range from 0 to 21 for both the anxiety depression scales. A score of 0 to 7, for either subscale, is regarded as being within the normal range, a score of 8-10 is borderline, and a score of 11 or higher indicating probable presence of a mood/anxiety disorder. Previous literature has consistently attested to the reliability and validity of this instrument.[58] For the present study the reliability of this measure was found to be 0.77.

### *3.6.5 Dysfunctional Beliefs and Attitudes about Sleep (DBAS 10)*

The DBAS scale identifies sleep-disruptive cognitions.[59] A shorter 10 item scale (DBAS-10) was developed by Espie and colleagues allowing for quick administration. This questionnaire consists of 10 statements with an analogue scale for the responder to state whether they strongly agree or strongly disagree with the statement. Scores can range between 0 and 10, with high scores indicating more dysfunctional attitudes and beliefs. In terms of psychometric properties the DBAS-10 correlates highly with the original measure and demonstrates acceptable psychometric properties.[60,61] For the present study the reliability of this measure was calculated to be 0.84.

### *3.6.6 Drawing Materials*

Drawings were produced on A4 sheets of plain white paper and coloured with Crayola pencils (red, red-orange, orange, yellow, yellow-green, green, sky-blue, blue, violet, light brown, brown and black).

### *3.6.7 Demographic Profile*

Caregivers were asked to complete a short demographic data form, designed by the author, to collect sociodemographic information including age and sex of child, postal code, information on diagnoses, and ethnicity.

## 3.7 Procedure

The researcher met with families where written informed consent from the caregiver and assent from the child where appropriate were obtained. The demographic data form and clinical sleep history assessment interview were completed by caregivers. Following this, caregivers were provided with three questionnaires to fill out: the HADS, DBAS-10 and SDQ. At this time each child was requested to complete 2 drawings; one of a bed and another of a dining table. Drawings were completed in a counterbalanced order, controlling for any order effects. Every child was provided with a blank, unlined piece of white paper (A4 size) and a pack of 12 coloured pencils and asked to *"Please draw a picture of a bed"*. To minimise bias, no leading questions or additional instructions were given. The children were allowed unlimited time to complete their drawing. Once the drawing was completed, the child was provided with another blank, unlined

piece of white paper (A4 size) and asked to *"Please draw a picture of a dining table"*. A dining table was chosen as the control drawing as it was considered that it would be a familiar object to children of all ages, whose size and constructive materials were similar to that of a child's bed. Whilst the child was allowed as much time as was required to complete the drawings most children completed the task within 15 minutes.

Children were also provided with an actigraph watch to wear for a minimum period of 5 full days and nights. Written instructions were also provided. The actigraphy data were analysed independently by an experienced researcher, blind to the clinical history. On collection of the actigraph, the family were debriefed and thanked for their participation in the study. Any questions arising from the study were discussed at this point also. Children were provided with a certificate thanking them for their involvement (see Appendix 2.3).

### 3.8 Analysis of Drawings

#### *3.8.1 Size*

The surface areas of the bed and the dining table were measured using a transparent grid of 0.5 cm. squares. Individual squares with over 50% covered were counted and squares with less than 50% covered were discounted. A second rater, blind to all hypotheses, measured the size of 20% of the drawings. Intraclass coefficient calculations indicated a high degree of agreement between raters (0.998). Sizes of the drawings under contention were recounted by both raters and a consensus reached. These drawings were subsequently included in the analyses.

#### *3.8.2 Colour*

The number of colours utilised in the child's drawing and the colour's themselves were recorded. Drawings were divided into groups, those who employed colour (both primary and secondary colours) and those which were 'dark', employing only black, or brown, or a combination of these.

### 3.9 Ethical Approval

Ethical approval was obtained under the Greater Glasgow NHS Trust Ethics Committee (see Appendix 2.4). Approval was also received by Greater Glasgow

and Clyde Research and Development Committee (see Appendix 2.5). Finally, ethical approval to approach schools in the Glasgow area was obtained through Glasgow City Council (see Appendix 2.6).

## 4. Data Analysis

Data were coded and analysed using SPSS software version 15.0 (SPSS Inc., Chicago, IL). Actigraphic data were analysed by the Actiwatch Activity and Sleep Analysis Cambridge Neurotechnology Programme, Version 7.22.

All data were checked for skewness and kurtosis, as well as homogeneity of variance using the Kolmogorov-Smirnov test. Due to the lack of homogeneity of variance, and the presence of skewed and kurtosed distributions, all of the variables, with the exception of sleep efficiency, were transformed using a square-root transformation prior to analysis, however, raw scores will be presented.

Differences between normal sleepers and disturbed sleepers were computed and tested for significance with independent sample t-tests, using the transformed data. A paired-sample t-test was employed to explore differences within the group of disturbed sleepers. Secondary analysis exploring differences between subjective and objectively defined groups was conducted using a Mixed Analysis of Variance (MANOVA). Comparisons between the caregiver report and actigraphic data were performed employing the kappa statistic ($\kappa$). Non-directional hypotheses were investigated using two-tailed analyses.

# 5. Results

## 5.1 Demographics

### *5.1.1 Sample Characteristics*

The total number of children recruited to this study was 87, aged between 4 and 11, with a mean age of 7.0 years (SD 2.3). Of the participants 46 were male and 41 were female. The majority ($n$=82) were Caucasian and the remaining children ($n$=5) were Pakistani. In addition, 14 of the children recruited reportedly suffered from the following disorders visual/ hearing impairment, dyslexia, dyspraxia, hypermobility, underactive thyroid, reflux and asthma. The caregivers of the children were mostly married ($n$=83), 3 were living with their partner and 1 was divorced. Whilst families were distributed through the spectrum of social classes, 40% lived in areas of greatest affluence, according to the Carstairs index for Scottish postcode sectors. Of the caregivers 73 were the child's mother and 14 were fathers.

Whilst 87 children were assessed, with no refusals to draw or wear the actigraphy watch, those with unusable drawings (n=3) and those who did not complete the required 5 days of actigraphy (n=2) were excluded from further analyses, leaving 82 participants in the usable sample. Of the 5 children who were excluded three were male and two female, their ages ranging from 4.0 to 6.9 years (mean 5.1, SD 1.28).

Examples of the children's drawings can be seen in Figures 1 and 2 below.

****Insert Figure 1 Here****

****Insert Figure 2 Here****

### *5.1.2 Normal and Disturbed Sleepers*

For the purposes of this research the distinction between normal and disturbed sleeper groups was made on the basis of caregiver report, as this reflects current clinical practice. There were no significant demographic differences between the

two groups. Full demographic details for the normal and disturbed sleeper groups can be found in Table 2.

****Insert Table 2 Here****

## 5.2 Inferential Analysis

Mean and standard deviations for untransformed drawing data are displayed in Table 3.

****Insert Table 3 Here****

### *5.2.1 Hypothesis 1*

Analysis of the sleep drawings of children in the normal and disturbed sleep groups revealed no significant differences between the groups ($t=-0.882$, $p=0.38$). These results indicate that, contrary to expectation, children in the disturbed sleep group did not produce either significantly larger or smaller drawings of a bed.

### *5.2.2 Hypothesis 2*

The size of the furniture drawings did not differ significantly between the normal and disturbed sleepers groups ($t=-1.073$, $p=0.288$), revealing that children in the disturbed and normal sleepers groups did not draw pictures of dining tables either significantly larger or smaller than one another.

### *5.2.3 Hypothesis 3*

Paired samples t-tests demonstrated no significant differences between the size ($t=0.359$, $p=0.724$), colouring ($t=-1.0$, $p=0.329$) or number of colours utilised ($t=-0.039$, $p=0.969$) between the bed and dining table drawings of children in the disturbed sleeper group. Thus, children with disturbed sleep patterns did not draw pictures of a bed significantly smaller or larger than pictures of a dining table. Nor did they colour their drawings significantly differently or employ significantly different numbers of colours in their two drawings.

Untransformed data on screening measures are displayed in Table 4.

****Insert Table 4 Here****

### 5.2.4 Hypothesis 4

The normal sleeper group and the disturbed sleeper group did not differ significantly on the total score of the SDQ (t=0.625, p=0.537). Nor did the two groups differ significantly on any of the sub scale scores of the SDQ which included emotional symptoms (t=0.924, p=0.358), conduct problems (t=0.886, p=0.378), hyperactivity/inattention (t=0.108, p=0.914), peer relationship problems (t=0.11, p=0.913), and prosocial behaviour (t=-1.078, p=0.291).

### *5.2.5 Hypothesis 5*

Statistical analyses showed that caregivers scores on the DBAS-10 did not significantly differ between the normal sleepers and disturbed sleepers groups (t=-0.532, p=0.597), signifying that caregivers of the children with a disturbed sleep pattern have similar attitudes and beliefs towards sleep as those with children with a normal sleep pattern.

### *5.2.6 Hypothesis 6*

The scores of caregivers of the children with a disturbed sleep pattern did not differ significantly from those with a normal sleep pattern on HADS, (HADS anxiety t=0.165, p=0.869; HADS depression t=0.151, p=0.88), inferring that caregiver mental health was comparable between the two groups.

## 5.3 Secondary Analysis of Data

Additional analyses were conducted on sub-groups of participants. Children were further divided into groups based on both subjective and objective accounts of sleep, as demonstrated in Figure 3 below:

****Insert Figure 3 Here****

### 5.3.1 Sleep Group Allocation According to Subjective and Objective Measures

Caregiver interview and actigraphy data had low rates of agreement ($\kappa = 0.373$ $p<0.001$). Details of the samples are presented in full in Table 5.

****Insert Table 5 Here****

### 5.3.2 Inferential Analysis

#### 5.3.2.1 Size and Colour of Drawings

Table 6 provides descriptive information for size and colour of the drawings for the four groups.

****Insert Table 6 Here****

Transformed area and colour scores for the four groups were analysed using a MANOVA. Results are detailed in Table 6. No significant main or interaction effects were found. Thus, none of the groups produced drawings significantly larger or smaller than the other groups, decorated their drawings using significantly different colourings or used significantly different numbers of colours in their drawings. In addition, there were no significant main or interaction effects when age was controlled for.

#### 5.3.2.2 Caregiver Measures

Means and standard deviations of the untransformed data for the SDQ, HADS, DBAS-10 and sleep efficiency measures, for the four groups, are shown in Table 7.

****Insert Table 7 Here****

Additional analyses were conducted using transformed HADS, SDQ and DBAS-10 scores, and the original sleep efficiency data, using a MANOVA. A significant difference was found between groups for the HADS scale ($F(3,82) = 3.795$, $p=0.05$). Post hoc analyses using a post-hoc Scheffé test indicated that disturbed

sleepers identified through actigraphy and disturbed sleepers identified through parental interview differed significantly on anxiety levels ($p=0.05$) but not depression ($p=0.792$). Therefore, caregivers who identified their children as having a disturbed sleep pattern had significantly higher anxiety scores on the HADS in comparison to caregivers of children identified as having a disturbed sleep pattern through actigraphy. No further significant effects were found.

## 6. Discussion

The present study was designed to investigate the usefulness of employing children's drawings in the identification of sleep disturbance. Results of this study indicated that children with disturbed sleep patterns, reported by proxy, did not reliably increase or decrease the size of their drawings of a bed in comparison to children with a normal sleep pattern, reported by proxy. In addition, children with disturbed sleep, reported by proxy, did not use significantly different colours or numbers of colours when compared to a group of normal sleepers, reported by proxy. Moreover, these results remained regardless of whether the method chosen to quantify groups was subjective or objective. It was interesting to note that caregivers who identified their children as having a disturbed sleep pattern had significantly higher anxiety scores on the HADS in comparison to caregivers of children identified as having a disturbed sleep pattern through actigraphy. One hypothesis which may account for this finding is that caregivers of children who recognise their children's sleep problems have less protective factors to buffer the stress of living with a child with difficult sleep patterns and therefore are less able to tolerate these difficulties.[16] Finally, the results of this study concluded that the presence of a disturbed sleep pattern was not associated with behavioural difficulties, dysfunctional caregiver attitudes and beliefs towards sleep or poor caregiver mental health. However, results obtained using the SDQ must be interpreted with caution due to the low reliability of this measure in this population.

It is interesting to speculate about why this study found no effect of size or colour. These results may in part be due to the study being underpowered as the numbers of children in the disturbed sleeper group, when defined by proxy report, objective actigraphy data or a combination of the two methods, falls below the minimum number ($n$=41) required to detect a medium effect size.[51] Furthermore, the nature of this study allowed children to complete freehand drawings in safe and familiar settings under relatively unrestricted conditions. It may be that whilst size and colour of children drawings changes in relation to affective characterisations under standardised and restricted conditions, the clinical utility of children's drawings on the other hand is not practically applicable.

Whilst the results of this study do not support the use of children's drawings to identify sleep disturbance it is important to note that the request for children to complete a drawing was well received by all of the children in this study with no refusals to draw. Furthermore, the majority of children discussed their drawings as they created them. Thus, children's drawings are a particularly effective tool for clinical engagement and facilitated discussion around sleep.

### 6.2 Subjective and Objective Measures of Sleep

A further area of interest was the poor agreement between caregiver and actigraphic report. These results are similar to those reported previously[7,16,53] and highlight the weakness of solely employing report by proxy to characterise children's sleep patterns. Given these results it is likely that caregivers may take into account a number of factors when evaluating their children's sleep. In contrast to previous literature, children in our samples did not differ on daytime behaviour, nor did their caregivers differ on attitudes and beliefs around sleep or mental health. There are a number of other potentially influential factors which may govern caregiver perceptions of sleep including cultural factors, attachment, and beliefs around what a normal sleep pattern for a child is,[62] which require further investigation.

Given the disagreement between objective and subjective methods of identifying children's sleep in the current study, and similar past findings, it is advisable to use a number of methods when assessing children's sleep. Actigraphy is a non-invasive objective measure that is readily accepted by children, and can easily be utilised in the home environment. The addition of such an approach will help to ensure appropriate classification and subsequently inform the appropriate treatment. The use of actigraphy in clinical practice, however, may not be a practical solution given that actigraphy watches are expensive to buy and appropriate expertise may not be available to the clinician in order to adequately interpret the data. Moreover, the use of actigraphy with younger children encompassed a number of challenges, for example these children often pushed the event marker button making the data collected via this method erroneous. Therefore, the researcher is encouraged to take additional precautions when using actigraphy with younger children.

### 6.3 Limitations & Future Research

Several limitations should be noted in interpreting and generalising these results. First, as with all creative pieces of work, a degree of subjectivity in rating children's drawings is inherent in the design. This limitation may be overcome through employing methods of digital image processing. Recently Kim and associates[63,64] designed and evaluated a computer system to rate colour and placement of drawings. The authors proposed that their computer package can be successfully utilised in gathering information regarding placement, space usage, colour recognition and edge detection of children's drawings. Furthermore, the authors noted that using the computer package, as opposed to human raters, significantly reduced time and effort, as well as eliminating the element of subjectivity and inconsistent judgements. To date the computer system has been verified through a limited number of case studies and school children's drawings. Therefore, a more extensive analysis using this approach is required.

Secondly, the sample was largely homogeneous with regards towards ethnicity, with the large majority of children being Caucasian. Consequently, the results of the study are not generaliseable to all ethnicities. The possibility that may have an affect on the size and colouring of children's drawings has been sorely neglected to date, with the majority of research in this area taking place in Westernised countries. Burkitt and collaborators[65] explored cultural differences between Finnish and English children's use of colour when drawing. The authors reported that the pattern of colour used between the two groups varied in relation to cultural difference, although the negative associations with black remained salient. Future studies would benefit from including minority ethnic groups to help better understand the role of culture and ethnicity in children's colour choice.

In this study children and caregivers were requested to use the event marking facility on the actiwatch when the child went to bed and when they got up in the morning. Unfortunately, this was done too inconsistently in order to employ this data in the analysis. Sleep efficiency values were therefore difficult to determine with any accuracy. It would be helpful therefore for future researchers to employ a sleep diary, either alone or in combination with event markers, in order that sleep

efficiency can be more accurately measured. In this way sleep efficiency could be utilised as a subsequent method of grouping children into sleep categories.

Regarding future research it would be helpful to conduct a similar study using larger sample sizes. It would also be interesting to take a collaborative research approach where explorations of such issues as children's own feelings towards the topics they are drawing are discussed with the researcher as the drawings are created. This would enable a fuller assessment to be conducted as well as providing useful contextual information. It was my experience that children were keen to engage in conversations in relation to their drawings, providing a more rounded understanding of the children's feelings and experiences of the topics they were drawing. Furthermore, such conversations helped not only to build a rapport between therapist and child, but added a further dimension of communication to the drawings bringing the children's artwork to life. This technique requires further systematic research and will help researchers and clinicians to more fully understand what is meaningfully being communicated through children's drawings.

Additional drawing indices which also deserve further systematic investigation include the placement of the drawing itself which has been hypothesised to indicate a child's emotional attitude towards those topics drawn.[43] It is important to note that drawings are complex constructions and many indices and characteristics must be systematically and rigorously researched before confident conclusions can be put forward. It is vital, however, that future research in this area takes a child's drawing ability into account in order to understand whether drawing indices are a result of developmental stage or are in fact meaningful affective communication. Focusing on indices, such as those discussed above, in future research, therefore, will not only help to further establish a systematic evidence base, but may also provide additional insights into the art of interpreting and understanding children's drawings.

Future replications of this and similar studies may also benefit from conducting a pilot study in order to identify potential challenges in conducting research of this kind with young children, in particular designing a standardised research protocol

and developing appropriate methodologies for the delivery of the drawing task. In addition, through running a pilot study prior to commencing the research project itself the researcher will become familiar and more confident with administration procedures. Moreover, the piloting process will also provide future researchers with a sense of the development of children's drawing abilities and the challenges involved in conducting such research, enabling a sensitive approach towards developing a research protocol to be adopted. This may further help in implementing future research protocols which employ a narrower age range of children so as to more fully explore the use of children's drawings across the ages and corresponding developmental artistic stages.

### 6.5 Conclusions

In conclusion, this study does not support the use of children's drawings for identifying sleep disturbance in children aged between 4 and 11 years. Nevertheless, drawings offer a non-threatening and enjoyable method of interaction with children and provide a means of rapport building. The use of drawing offered children a way of discussing potentially difficult material as well as a means of participating in the assessment process which is particularly important given that caregivers are poor at recognising where a sleep problem exists. There is a need for continued scientifically rigorous research on the use of drawings in identifying children's sleep patterns in order to clarify the role of projective indices such as size and colour use in children's drawings.

## 7. References


1. Dahl RE. The development and disorders of sleep. Advances in Pediatrics 1998:45:73-90.
2. Stores G, Wiggs L. Clinical services for sleep disorders. Archives of Disease in Childhood 1998:79:495-497.
3. Mindell JA. Empirically supported treatments in pediatric psychology: bedtime refusal and night wakings in young children. Journal of Pediatric Psychology 1999:24(6):465-481.
4. Sadeh A, Raviv A, Gruber R. Sleep Patterns and Sleep Disruptions in School-Age Children. Developmental Psychology 2000:36(3):291-301.
5. Lam P, Hiscock H, Wake M. Outcomes of Infant Sleep Problems: A Longitudinal Study of Sleep, Behavior and Maternal Well-Being. Pediatrics 2003:111:e203-e207.
6. Rona RJ, Li L, Gulliford MC, Chinn S. Disturbed sleep: effects of sociocultural factors and illness. Archives of Disease in Childhood 1998:78:20-5.
7. Paavonen EJ, Aronen ET, Moilanen I et al. Sleep problems of school-aged children: a complementary view. Acta Paediatrica 2000:89:223-228.
8. Butler NR, Golding J. From birth to five. A study of health and behaviour of Britain's five-year-olds. London: Pergamon, 1986.
9. Kataria S, Swanson MS, Trevathan GE. Persistence of sleep disturbances in preschool children. The Journal of Pediatrics 1987:110:642-646.
10. Guilhaume A, Benoit O, Gourmeten M, Richardet JM. Relationship between sleep stage IV deficit and reversible HGH deficiency in psychosocial dwarfism. Pediatric Research 1982:16:299-303.
11. Pilcher JJ, Huffcutt AI. Effects of sleep deprivation on performance: a meta-analysis. Sleep 1996:19:318-26.
12. Dahl RE. The Impact of Inadequate Sleep on Children's Daytime Cognitive Function. Seminars in Pediatric Neurology 1996:3(1):44-45.

13. Stores G. Children's sleep disorders: modern approaches, developmental effects, and children at special risk. Developmental Medicine and Child Neurology 1999:41:568-573.
14. Zuckerman B, Stevenson J, Bailey V. Sleep problems in early childhood: Continuities, predictive factors, and behavioral correlates. Pediatrics 1987:80:664-671.
15. Armstrong KL, Van Haeringen AR, Dadds MR, Cash R. Sleep deprivation or postnatal depression in later infancy: separating the chicken from the egg. Journal of Paediatric and Child Health 1998:34:260-262.
16. Wiggs L, Stores G. Factors affecting parental reports of the sleep patterns of children with severe learning disabilities. British Journal of Health Psychology 1998:3:345-359.
17. Sadeh A, Lavie P, Scher A, Tirosh E, Epstein R. Actigraphic home-monitoring sleep-disturbed and control infants and young children: A new method for pediatric assessment of sleep-wake patterns. Pediatrics 1991:87:494-499.
18. Schaefer CE. Night waking and temperament in early childhood. Psychological Report 1990:67:192-194.
19. Smedje H, Broman JE, Hetta J. Associations between disturbed sleep and behavioural difficulties in 635 children aged six to eight years: a study based on parents' perceptions. European Child and Adolescent Psychiatry 2001:10(1):1–9.
20. Sadeh A, Lavie P, Scher A. Sleep and temperament: Maternal perceptions of temperament of sleep disturbed toddlers. Early Education and Development 1994:5:311-322.
21. Carney CE, Edinger JD, Manber R, Carson MA, Segal ZV. Beliefs about sleep in disorders characterized by sleep and mood disturbance. Journal of Psychosomatic Research 2007:62(2):179-188.
22. Sadeh A, Flint-Ofir E, Tirosh T, Tikotzky L. Infant Sleep and Parental Sleep-Related Cognitions. Journal of Family Psychology 2007:21(1):74-87.

23. Bayer JK, Hiscock H, Hampton A, Wake M. Sleep problems in young infants and maternal mental and physical health. Journal of Paediatrics and Child Health 2007:43:66-73.
24. Bradding A, Horstman M. Using the write and draw technique with children. European Journal of Oncology Nursing 1999:3(3):170-175.
25. Stafstrom CE, Havlena J. Seizure drawings: insight into the self-image of children with epilepsy. Epilepsy and Behavior 2003:4:43-56.
26. Lowenfeld V. Creative and Mental Growth (7th ed.) New York: Macmillan; 1947.
27. Malchiodi C. Understanding Children's Drawings. Guilford Press: New York; 1998.
28. Nelson T, Allan D, Nelson J. Cultural differences in the use of colour in Northwest Canada. International Journal of Psychology 1971:6:283–292.
29. Robertson D, Davies I, Davidoff J. Colour categories are not universal: Replications and new evidence from a stone-age culture. Journal of Experimental Psychology: General 2000:129:369–398.
30. Zentner M. Preferences for colours and colour–emotion combinations in early childhood. Developmental Science 2001:4:389–398.
31. Adams F, Osgood E. A cross-cultural study of the affective meanings of colour. Journal of Cross-Cultural Psychology 1973:4:135–156.
32. Burkitt E. Drawing Conclusions from Children's Art. The Psychologist 2004:17(10):566-568.
33. Gabriels RL, Wamboldt MZ, McCormick DR, Adams TL, McTaggart SR. Children's illness drawings and asthma symptom awareness. Journal of Asthma 2000:37:565-574.
34. Stefanatou A, Bowler D. Depiction of pain in the self-drawings of children with sickle cell disease. Child Care Health and Development 1997:23(2):135-155.
35. Peterson LW, Zamboni S. Quantitative art techniques to evaluate child trauma: a case review. Clinical Pediatrics 1998:37(1):45-51.
36. Stefanatou A, Bowler D. Depiction of pain in the self-drawings of children with sickle cell disease. Child Care Health and Development 1997b:23(2): 135–155.

37. Lukash FN. Children's Art as a Helpful Index of Anxiety and Self-Esteem with Plastic Surgery. Plastic and Reconstructive Surgery 2002:109(6):1777-1786.
38. Aronsson K and Andersson S. Social Scaling in Children's Drawings of Classroom Life: A Cultural Comparative Analysis of Children's Drawings in Africa and Sweden. British Journal of Developmental Psychology 1996:14:301–314.
39. Burkitt E, Barrett M, Davis A. The effect of affective characterisations on the size of children's drawings. British Journal of Developmental Psychology 2003(b):21:565-584.
40. Burkitt E, Barrett M, Davis A. The Effect of Affective Characterizations on the Use of Size and Colour in Drawings Produced by Children in the Absence of a Model. Educational Psychology 2004:24(3):315-343.
41. Burkitt E, Barrett M, Davis A. Children's colour choices for completing drawings of affectively characterised topics. Journal of Child Psychology and Psychiatry 2003(a):44(3):445-455.
42. Fox T, Thomas GV. Children's drawings of an anxiety-eliciting topic: Effect on size of the drawing. British Journal of Clinical Psychology 1990:29:71–81.
43. Jolley RP, Vulic-Prtoric A. Brief report Croatian children's experience of war is not re-acted in the size and placement of emotive topics in their drawings. British Journal of Clinical Psychology 2001:40:107-110.
44. Cox M. Children's Drawings. Penguin Books: London, 1992.
45. Furth, G. The secret world of drawings. Boston: Sigo Press, 1988.
46. Golomb, C. The child's creation of a pictorial world. Berkeley: University of California Press, 1992.
47. Malchiodi, CA. Breaking the silence: Art therapy with children from violent homes. New York, NY: Brunner/Mazel, 1990.
48. Gantt L, Tabone C. The formal elements art therapy scale and "Draw a Person Picking an Apple from a Tree". In C. A. Malchiodi (Ed.), Handbook of art therapy New York: The Guilford Press, 1998:420–427.
49. Gregorian VS, Azarian A, DeMaria MB, McDonald LD. Colors of disaster: The psychology of the "black sun". The Arts in Psychotherapy 1996:23:1–14.

50. Rae W. Analyzing drawings of children who are physically ill and hospitalized, using the ipsative method. Child Health Care 1991:20:198–207.
51. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods, 2007:39:175-191.
52. Morin CM, Espie CA. Insomnia: A Clinical Guide to Assessment and Treatment. Kluwer Academic: New York, 2003.
53. Sadeh A. Assessment of intervention for infant night waking: Parental reports and activity-based home monitoring. Journal of Consulting and Clinical Psychology 1994b; 62:63-68.
54. Goodman R. The Strengths and Difficulties Questionnaire: A research note. Journal of Child Psychology and Psychiatry 1997:38:581-586.
55. Goodman R. Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). Journal of the American Academy of Child and Adolescent Psychiatry 2001:40:1337-1345.
56. Muris P, Meesters C, Eijkelenboom A, Vincken M. The self-report version of the Strengths and Difficulties Questionnaire: Its psychometric properties in 8- to 13-year-old non-clinical children. British Journal of Clinical Psychology 2004:43(4):437-448.
57. Zigmond AS, Snaith RP. The Hospital Anxiety And Depression Scale. Acta Psychiatrica Scandinavica 1983:67:361-370.
58. Bjelland I, Dahl AA, Haug TT, Neckelmann D. The validity of the Hospital Anxiety and Depression Scale. An updated literature review. Journal of Psychosomatic Research 2002:52(2):69-77.
59. Morin CM. Insomnia: psychological assessment and management. New York, NY: Guilford Press; 1993.
60. Edinger JD, Wohlgemuth WK. Psychometric comparisons of the standard and abbreviated DBAS-10 versions of the dysfunctional beliefs and attitudes about sleep questionnaire. Sleep Medicine 2001:2(6): 93-500(8)
61. Espie CA, Ingllis SJ, Harvey L, Tessier S. Insomniacs' attributions: psychometric properties of the Dysfunctional Beliefs and Attitudes

about Sleep Scale and the Sleep Disturbance Questionnaire. Journal of Psychosomatic Research 2000:48:141-148.

62. Stores G. A Clinical Guide to Sleep Disorders in Children and Adolescents. Cambridge University Press, 2001.
63. Kim S, Bae J and Lee Y. A computer system to rate the color-related formal elements in art therapy assessments. The Arts in Psychotherapy 2007:34(3):223–237.
64. Kim S, Kang HS, Kim KE. Computer determination of placement in a drawing for art therapy assessments. The Arts in Psychotherapy 2008:35(1):49-59.
65. Burkitt E, Tala K, Low J. Finnish and English children's color use to depict affectively characterized figures. International Journal of Behavioral Development 2007:31(1):59–64.

**LIST OF TABLES AND FIGURES (Chapter 2)**

**Table One: Developmental Framework of Children's Drawings**

| Stage | Age | Description |
|---|---|---|
| Scribbling | 18 months – 3 years | Earliest type of drawing. The child is thinking kinaesthetically and begins to improve eye hand coordination. Various types of scribbling including circular, longitudinal and disordered. By the end of this stage the child is able to recognise the edge of the paper and draw shapes and is also able to name the scribblings. |
| Basic Forms | 2-4 years | Child enjoys naming and inventing stories about their drawings and will actively seek to talk about them. Symbolic thought beginning to emerge. Children now able to connect the marks they make on the paper to the outside world. Rudimentary human figures begin to appear. |
| Human Forms And Early Schemata | 4-6 years | Early development of representational symbols, particularly rudimentary forms representing humans, for example tadpole drawings in which people are represented by one central shape with arms and legs attached at the sides. Also often enjoys drawing things in their own environments such as houses, sun, flowers and so fourth. |
| Emergence Of Visual Schema | 7-9 years | Continuing development of representational figures. Develops visual symbols/ true schemata for human figures, animals, houses—often fairly standard to most children's drawings (house with triangular roof, person with a hairstyle, arms and legs); Use of ground/baseline. |
| Interest In Realistic Drawing | 9- 12 years | Child begins to shift away from egocentric thinking and considers thoughts, feelings of others. Developing skills in depicting spatial depth and colour. Increasing rigidity in artistic expression. |
| Adolescent Artistic Development | Adolescence | Child thinks about large systems of events, can reason about ideas, impossibilities, probabilities, and broad abstract concepts. Artistic expression becoming increasingly sophisticated and detailed, but less free due to a need for perfection/photogenic effect. Critical awareness developing. May not draw at all at this stage |

**Table Two: Demographic Details For The Normal And Disturbed Sleeper Groups, According To Proxy Report**

| | Disturbed Sleepers (N=21) | Normal Sleepers (N=61) | Test Statistic | *p* Value |
|---|---|---|---|---|
| **Age (years)** | | | | |
| Range | 4-11.7 | 4.1-11.5 | | |
| Mean (SD) | 7.4 (2.2) | 7.0 (2.3) | t=-0.693 | p=0.490 |
| **Gender (%)** | | | $\chi^2$ (1)=0.118 | p=0.293 |
| Male | 9 (42.9) | 33 (54.1) | | |
| **Female** | 12 (57.1) | 28 (45.9) | | |
| **Ethnicity (%)** | | | $\chi^2$ (1)=-0.041 | p=0.715 |
| White | 20 (95.2) | 58 (95.1) | | |
| Pakistani | 1 (4.8) | 3 (4.9) | | |
| **Diagnosis (%)** | | | $\chi^2$ 10(9)=0.097 | p=0.387 |
| None | 14 (66.7) | 54 (88.5) | | |
| Visual Impairment | 4 (19.0) | 2 (3.3) | | |
| Hearing Impairment | 1 (4.8) | 0 (0) | | |
| Asthma | 0 (0) | 1(1.6) | | |
| Oesophageal Reflux | 0 (0) | 1(1.6) | | |
| Hypermobility | 0 (0) | 1(1.6) | | |
| Underactive Thyroid | 1 (4.8) | 0 (0) | | |
| Dyslexia | 0 (0) | 1(1.6) | | |
| Learning Disability | 1 (4.8) | 0 (0) | | |
| Dyspraxia | 0 (0) | 1(1.6) | | |
| **Marital status of Caregiver (%)** | | | $\chi^2$ (2)=0.149 | p=0.181 |
| Married | 18 (85.7) | 60 (98.4) | | |
| Divorced | 1(4.8) | 0 (0) | | |
| Living with Partner | 2 (9.5) | 1 (1.6) | | |
| **SES as defined by Postal Code (%)** | | | $\chi^2$ (7)=0.144 | p=0.198 |
| 1 | 6 (28.6) | 23 (37.7) | | |
| 2 | 3 (14.3) | 8 (13.1) | | |
| 3 | 4 (19.0) | 9 (14.8) | | |
| 4 | 2 (9.5) | 6 (9.8) | | |
| 5 | 3 (14.3) | 5 (8.2) | | |
| 6 | 2 (9.5) | 4 (6.6) | | |
| 7 | 0 (0) | 0 (0) | | |
| Unknown | 1 (4.8) | 6 (9.8) | | |

**Table Three: Mean And Standard Deviations For Untransformed Drawing Data**

| | **Normal Sleepers (N=61)** | **Disturbed Sleepers (N=21)** |
|---|---|---|
| | **Mean (SD)** | **Mean (SD)** |
| **Area of Bed $cm^2$** | 122.1 (117.8) | 97.9 (73.8) |
| **Area of Table $cm^2$** | 119.6 (116.9) | 88.5 (56.3) |
| **No. of Colours in Bed Picture** | 4.1 (2.4) | 3.5 (2.0) |
| **No. of Colours in Table Picture** | 3.1 (2.2) | 3.6 (2.3) |
| **Primary Coloured Bed Pictures** (%) | 55 (90.2) | 20 (95.2) |
| **Dark Coloured Bed Pictures (%)** | 6 (9.8) | 1 (4.8) |
| **Primary Coloured Table Pictures** (%) | 48 (78.7) | 18 (85.7) |
| **Dark Coloured Table Pictures** (%) | 13 (21.3) | 3 (14.3) |

**Table Four: Untransformed Data On Screening Measures**

| | Normal Sleepers (N=61) | Disturbed Sleepers (N=21) |
|---|---|---|
| | **Mean (SD)** | **Mean (SD)** |
| **HADS Anxiety Score** | 6.2 (3.3) | 6.33 (3.54) |
| **HADS Depression Score** | 2.8 (2.3) | 3.0 (2.5) |
| **SDQ Conduct Problems** | 1.3 (1.3) | 1.6 (1.2) |
| **SDQ Hyperactivity / Inattention** | 3.6 (2.1) | 3.7 (2.3) |
| **SDQ Peer Problems** | 1.03 (1.3) | 1.4 (1.7) |
| **SDQ Emotional Symptoms** | 2.1 (1.8) | 2.7 (2.1) |
| **SDQ Prosocial Behaviours** | 8.2 (2.01) | 7.5 (2.9) |
| **SDQ Total Difficulties Score** | 8.11 (3.7) | 9.4 (5.9) |
| **DBAS-10 Total Score** | 4.6 (1.9) | 4.3 (1.7) |

**Table Five: Demographic Details For Normal And Disturbed Sleeper Groups, According to Subjective and Objective Measures**

| | Normal Sleepers (N=55) | Disturbed Sleepers By Actigraphy (N=15) | Disturbed Sleepers By Interview (N=21) | Disturbed Sleepers By Actigraphy & Interview (N=9) |
|---|---|---|---|---|
| **Age (years)** | | | | |
| Range | 4.1-11.5 | 4-9.3 | 4-11.7 | 4-7.9 |
| Mean | 7.0 (2.3) | 6.6 (1.7) | 7.4 (2.2) | 6.2 (1.4) |
| **Gender (%)** | | | | |
| Male | 31 (56.4) | 6 (40) | 9 (42.9) | 4 (44.4) |
| Female | 24 (43.6) | 9 (60) | 12 (57.1) | 5 (55.6) |
| **Ethnicity (%)** | | | | |
| White | 52 (94.5) | 15 (100) | 20 (95.2) | 9 (100) |
| Pakistani | 3 (5.5) | 0 (0) | 1 (4.8) | 0 (0) |
| **Diagnosis (%)** | | | | |
| None | 49 (89.1) | 11 (73.3) | 14 (66.7) | 6 (66.7) |
| Visual Impairment | 1 (1.8) | 3 (20) | 4 (19.0) | 2 (22.2) |
| Hearing Impairment | 0 (0) | 0 (0) | 1 (4.8) | 0 (0) |
| Asthma | 1 (1.8) | 0 (0) | 0 (0) | 0 (0) |
| Oesophageal Reflux | 1 (1.8) | 0 (0) | 0 (0) | 0 (0) |
| Hypermobility | 1 (1.8) | 0 (0) | 0 (0) | 0 (0) |
| Underactive Thyroid | 0 (0) | 0 (0) | 1 (4.8) | 0 (0) |
| Dyslexia | 1 (1.8) | 0 (0) | 0 (0) | 0 (0) |
| Learning Disability | 0 (0) | 1 (6.7) | 1 (4.8) | 1 (11.1) |
| Dyspraxia | 1 (1.8) | 0 (0) | 0 (0) | 0 (0) |
| **Marital status of Caregiver (%)** | | | | |
| Married | 54 (98.2) | 15 (100) | 18 (85.7) | 9 (100) |
| Divorced | 0 (0) | 0 (0) | 1(4.8) | 0 (0) |
| Living with Partner | 1 (1.8) | 0 (0) | 2 (9.5) | 0 (0) |
| **SES as defined by Postal Code (%)** | | | | |
| 1 | 19 (34.5) | 8 (53.3) | 6 (28.6) | 4 (44.4) |
| 2 | 8 (14.5) | 0 (0) | 3 (14.3) | 0 (0) |
| 3 | 9 (16.4) | 2 (13.3) | 4 (19.0) | 2 (22.2) |
| 4 | 6 (10.9) | 0 (0) | 2 (9.5) | 0 (0) |
| 5 | 4 (7.3) | 3 (20) | 3 (14.3) | 2 (22.2) |
| 6 | 3 (5.5) | 2 (13.3) | 2 (9.5) | 1 (11.1) |
| 7 | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| Unknown | 6 (10.9) | 0 (0) | 1 (4.8) | 0 (0) |

**Table Six: Descriptive Information For Size & Colour Of The Drawings For Normal And Disturbed Sleeper Groups, According to Subjective and Objective Measures**

| | Normal Sleepers (N=55) | Disturbed Sleepers Actigraphy (N=15) | Disturbed Sleepers Interview (N=21) | Disturbed Sleepers Actigraphy & Interview (N=9) | *p* Value |
|---|---|---|---|---|---|
| | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) | |
| Area of Bed $cm^2$ | 127.9 (122.1) | 97.8 (79.3) | 97.9 (73.8) | 117.3 (93.6) | n.s. |
| Area of Table $cm^2$ | 123.7 (120.8) | 79.1 (63.9) | 88.5 (56.3) | 76.6 (64.5) | n.s. |
| No. of Colours in Bed Picture | 4.1 (2.5) | 2.9 (2.0) | 3.5 (2.0) | 2.3 (1.7) | n.s. |
| No. of Colours in Table Picture | 3.2 (2.2) | 2.4 (1.7) | 3.6 (2.3) | 2.8 (2.0) | n.s. |
| Primary Coloured Bed Pictures (%) | 50 (90.9) | 13 (86.7) | 20 (95.2) | 8 (88.9) | n.s. |
| Dark Coloured Bed Pictures (%) | 5 (9.1) | 2 (13.3) | 1 (4.8) | 1 (11.1) | n.s. |
| Primary Coloured Table Pictures (%) | 44 (80) | 12 (80) | 18 (85.7) | 8 (88.9) | n.s. |
| Dark Coloured Table Pictures (%) | 11 (20) | 3 (20) | 3 (14.3) | 1 (11.1) | n.s. |

**Table Seven: Means & Standard Deviations Of Untransformed Data For SDQ, HADS, DBAS-10 & Sleep Efficiency Measures For Normal And Disturbed Sleeper Groups, According to Subjective and Objective Measures**

| | Good Sleepers (N=55) | Disturbed Sleepers By Actigraphy (N=15) | Disturbed Sleepers By Interview (N=21) | Disturbed Sleepers By Actigraphy & Interview (N=9) |
|---|---|---|---|---|
| | Mean (SD) | Mean (SD) | Mean (SD) | Mean (SD) |
| HADS Anxiety Score | 6.5 (3.2) | 4.3 (3.1) | 6.3 (3.5) | 4.9 (3.2) |
| HADS Depression Score | 2.9 (2.3) | 2.4 (2.5) | 3.0 (2.4) | 2.6 (2.8) |
| SDQ Conduct Problems | 1.4 (1.4) | 1.2 (1.0) | 1.6 (1.2) | 1.3 (1.2) |
| SDQ Hyperactivity / Inattention | 3.7 (2.2) | 3.3 (2.0) | 3.7 (2.3) | 3.3 (2.3) |
| SDQ Peer Problems | 1.0 (1.3) | 1.3 (1.4) | 1.4 (1.7) | 1.4 (1.7) |
| SDQ Emotional Symptoms | 2.2 (1.8) | 1.9 (1.7) | 2.7 (2.1) | 2.2 (1.8) |
| SDQ Prosocial Behaviours | 8.0 (2.1) | 8.1 (2.2) | 7.5 (2.9) | 7.2 (2.4) |
| SDQ Total Difficulties Score | 8.3 (3.7) | 7.5 (4.5) | 9.4 (5.9) | 8.3 (5.2) |
| DBAS-10 Total Score | 4.6 (2.0) | 4.4 (1.8) | 4.3 (1.7) | 4.4 (1.8) |
| Sleep Efficiency | 76.3 (6.3) | 71.6 (8.2) | 72.5 (6.3) | 70.7 (7.4) |

**Figure One: Drawing Of A Table and a Bed By a 6 Year Old Boy With A Normal Sleep Pattern**

**Figure Two: Drawing Of A Table And A Bed By A 9 Year Old Girl With A Disturbed Sleep Pattern Confirmed Subjectively And Objectively**

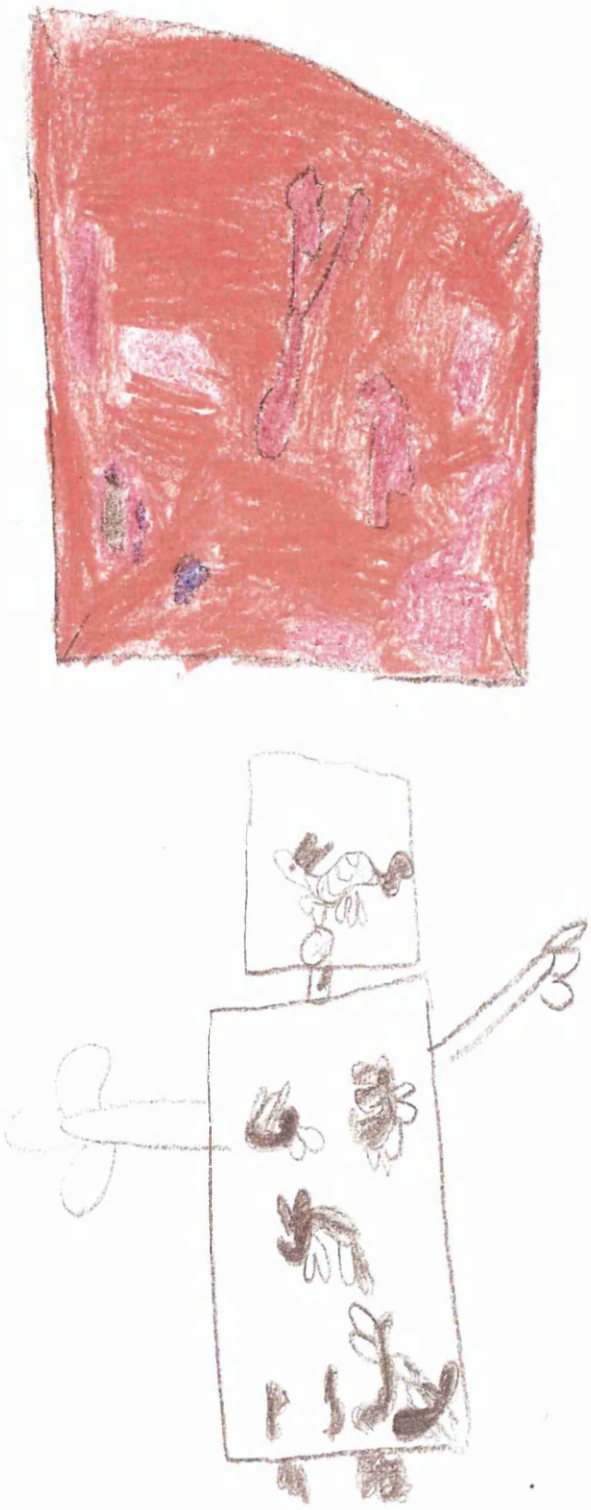

**Figure Three:** **Sleep Group Allocation According to Subjective and Objective Measures**

| | | Subjective Measure of Sleep | |
|---|---|---|---|
| | | Parent Interview Suggested Disrupted Sleep Pattern | Parent Interview Did Not Suggest Disrupted Sleep Pattern |
| Objective Measure of Sleep | Actigraphic Data Suggested Disrupted Sleep Pattern | N=9 | N=15 |
| | Actigraphic Data Did Not Suggest Disrupted Sleep Pattern | N=21 | N=55 |

# CHAPTER THREE

## ADVANCED PRACTICE I REFLECTIVE CRITICAL ACCOUNT ABSTRACT

**Look Before You Leap: A Trainees Struggle to Become a Truly Reflective Practitioner**

Supervisor: Dr. Julie Strachan

Word Count: 5,000

## 1. Abstract

Reflection acts as the bridge between theory and practice, enabling us to develop our clinical practice and move forward both personally and professionally. Reflective practice is no longer a skill which Psychologists can simply claim to be proficient in through calling ourselves 'reflective practitioners'; instead we are now required by law to formally evidence such claims.

This reflective account charts my own personal struggle in working as a reflective practitioner, as I prepare to leave the safety of my clinical training behind. In this account I have chosen to focus on my work with a young family following them through from our initial appointment to discharge. Throughout this account a number of themes emerge regarding reflective practice. More specifically, whilst this account has enabled me to reflect on and discuss some of the contextual issues which presented themselves through our clinical encounters, as well as some of the broader process issues. In order to guide and develop this reflection I have worked with models suggested by both Gibbs (1988) and Rolfe (2001).

It is my hope that in reading this open and honest account others will be encouraged and inspired to consider and review the role reflection currently assumes in their own clinical practice.

# CHAPTER FOUR

## ADVANCED PRACTICE II REFLECTIVE CRITICAL ACCOUNT
## ABSTRACT

**Hats off to the Scientist-Practitioners**

Supervisor: Dr. Gayle Cooney

Word Count: 4,000

## 1. Abstract

Employing reflection as a tool for learning works through its ability to turn the latter into the former. This has been beneficial as a trainee as it has encouraged and supported me in capitalising on my learning experiences and expanded my knowledge base, building up those skills which I will utilise in future work.

The identified focus of this reflective account is the relationship between the scientist and the practitioner. This account follows my own personal journey as I discover, through reflection, how deeply entwined the two concepts are.

The National Occupational Standards (NOS) and Schön's (1983, 1987) model of reflection, where the distinction between two types of reflective processes are emphasised; reflection-in-action and reflection-on-action, have helped to guide and develop this account. Whilst there has been much debate and criticism levelled at this model of reflection, I chose to work with Schön's model as I felt it intuitively fitted with the subject matter I had chosen to reflect upon and it did not stifle my train of thought but in fact developed it. This model has allowed me to recognise my thoughts and feelings as they entered my consciousness, hear and make sense of them, before finally taking my new understanding and knowledge forward into clinical practice, aiding me in better understanding both the way I think and the way I learn.

It is my hope that this reflective account will encourage other people working in both the academic and clinical industries to take a closer look at their own relationship with the research practitioner model and to honestly consider its influences in their own arena.

## CONTENT OF APPENDICES

### Appendix 1: Systematic Literature Review



### Appendix 2: Major Research Project Paper

## Appendix 1.1: Guidelines for submission to 'The Arts in Psychotherapy'

**Guide for Authors**

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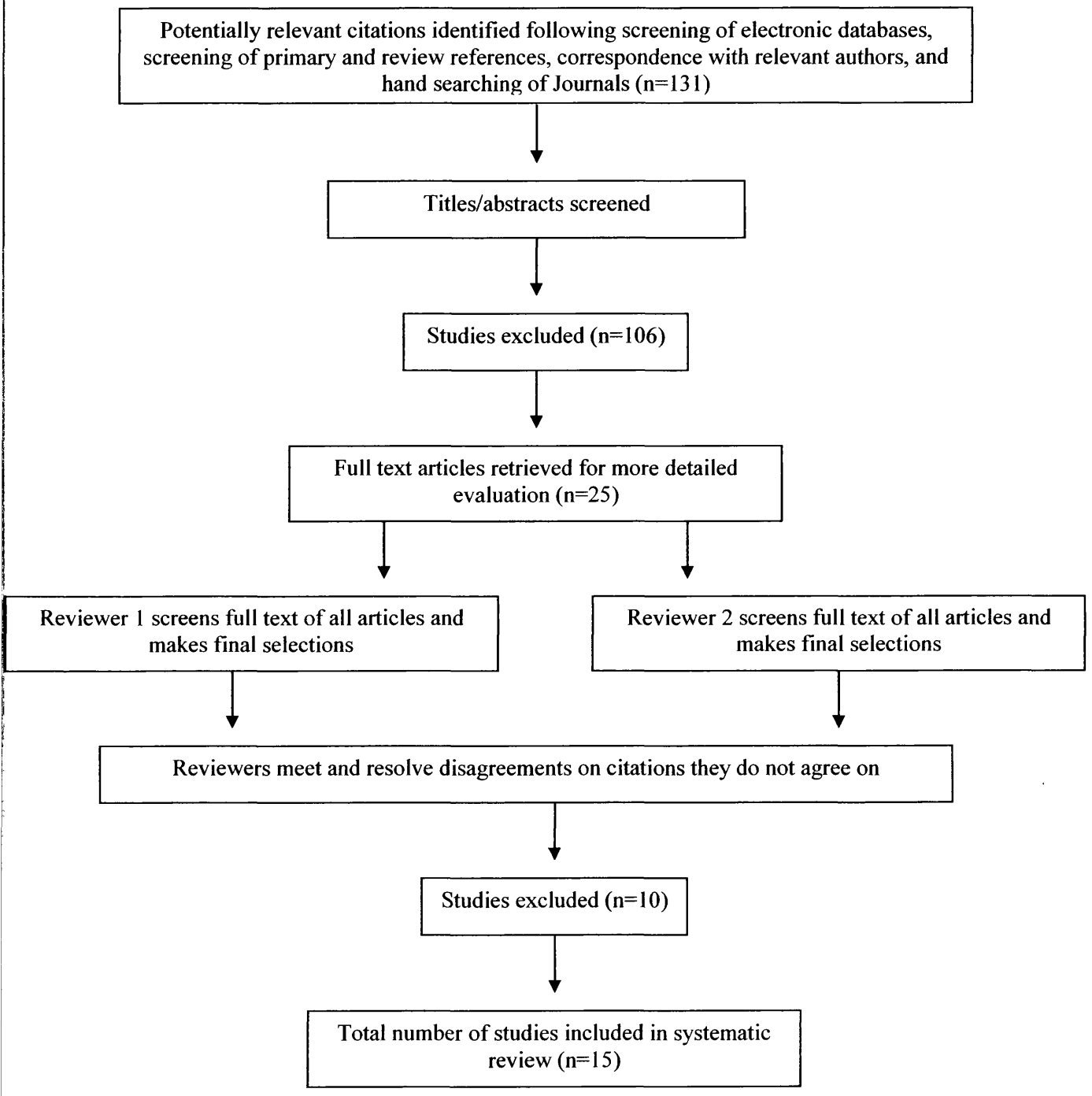
**Appendix 1.2: Flow Diagram of Study Selection Process**



## Appendix 2.1: Major Research Project Proposal

### 1. Abstract

### 1.2 Background:

Sleep disturbance in childhood is a common problem and can be a major source of distress for many children and their families. Despite this, the diagnosis and treatment of sleep disorders in children remains to be underdeveloped in both theory and practice. Generally the diagnostic process utilises caregiver report, with objective measures, such as actigraphy, employed less often. Conventionally, no account is taken of the child's perspective of their sleep difficulties throughout this process. Offering children the opportunity to draw appears to be a potentially novel and powerful way of engaging and involving children as active participants in the diagnostic process.

### 1.3 Aim:

The aim of this study is to investigate the usefulness of employing children's drawings in the diagnostic process of sleep disorders; when compared with more traditional methods of diagnosis.

### 1.4 Method:

This study will employ a mixed design, with two groups of children; a control sample of children with a normal sleep pattern and a clinical sample of children with a disturbed sleep pattern. Both groups will consist of approximately 41 children. All of the children will be recruited using advertisements. The sleep patterns of all participating children will be monitored using actigraphs. Actigraphy data will be scored by two experienced clinicians, blinded to clinical history, and a diagnosis given. A clinical diagnosis of sleep disorder will also be determined independently through a clinical interview. Children will also be asked to draw a picture of a bed and a picture of a dining table. The size and colouring of children's 'sleep' drawings will be compared between groups; and the size and colouring of the children's 'sleep' and 'furniture' drawings within participants. The drawings will be scored as either suggestive of a sleep disorder or no sleep disorder.

## 2. Introduction

### 2.1 Background

The scientific study of sleep and related disorders is a relatively new area of research, and its emphasis remains firmly within the adult population.

### 2.2 Developmental Considerations

Given that sleep could be considered a key activity during the early years, it is important to consider it at a development level.[1]

#### 2.2.1 Sleep Architecture

While sleep is commonly thought of as a time for rest and relaxation it is actually an active process.[2] The measurement of eye movements during sleep are used to divide it into two broad phases; rapid eye movement (REM) and non-rapid eye movement (NREM) sleep. Each phase has a distinct set of associated physiological, neurological and psychological features. Generally, the sleep process comprises of cycles of each of these phases, lasting approximately 50-60 minutes in childhood and maturing to a 90-110 minute cycle by adulthood.[2, 3]

Sleep behaviours begin to develop before the child is even born. At around 6 month's gestation, a foetus will experience REM sleep. Non-REM sleep follows suit shortly after, and by the end of the eight months in utero, regular sleep patterns are well established.[4]

#### 2.2.2 Patterns of Sleep

In general, maturation and consolidation of the sleep-wake cycle encompasses two main undertakings. First, a shift from polyphasic sleep, many periods of sleep distributed across the day and the night, to one long sleep period concentrated during the night hours.[4] This is usually achieved around 1 year of age.[5] Secondly, there is a gradual reduction in sleep duration, accompanied by increases in waking time,[6] as shown in Figure 1:

*** Insert Figure 1 Here ***

Given these differences between adult and child sleep patterns at an architectural, and organisational level, it is perhaps not surprising that sleep disorders of child and adulthood may differ in presentation, significance, cause and treatment.[3]

**2.4 Prevalence**

Due to an under-representation of children's sleep disorder medicine in both clinical and research practice, it is not known with any accuracy, the prevalence of sleep disorders in any age group. Anecdotally at least, sleep disorders are extremely common in young children with conservative estimates suggesting 20-30% of children during the first 3 years of life experience sleep disturbances, with the most common difficulties being settling and night waking.[6-11] Less is known about children of school age. Some studies report a drop in the occurrence of sleep disturbance to around 1-4% in school aged children,[12] however it is likely this is a gross underestimation given that older children may be less likely to disturb or discuss their problems with their parents, alerting them to their difficulties.[6] Other studies report a similar prevalence to younger children.[13,14]

For the most part sleep problems are mild and transient in nature, however for a minority these difficulties can become more extreme, of longer duration, and have considerable implications for both the child and their family. For example, Butler and Golding reported that 83% of babies exhibiting sleep disturbance continued to do so three years later.[15]

Importantly, patterns of sleep difficulties have been shown to vary between countries, suggesting that sleep problems occur within a cultural context[16,17] and are predominantly a concern of western cultures.[7,18,19] The most striking differences can be seen between societies where light is in abundance, either by natural or artificial means, and those where it is not, suggestive of a circadian problem. Cultures with limited access to light often report more broken sleep patterns.[17]

**2.5 Effects of Sleep Difficulties**

Some experts assert that one of the functions of sleep is restorative in nature, allowing the body to repair itself.[2] Therefore, it can be argued that a sleep disorder

will have implications at a physical and biological level. During sleep, many biochemical and physiological processes are taking place including the secretion of growth hormone, which contributes to childhood growth and helps regulate the body's proportions of fat and muscle mass in adults.[2] Interestingly, failure to thrive is one of the recognised outcomes of early onset sleep apnoea.[20] One theory that may account for this relationship is that the sleep cycles of children with sleep apnoea are disrupted to the extent that insufficient growth hormone is being released during non-REM sleep. Discoveries such as these have led to a consensus amongst clinicians and researchers alike that sleep is essential to general health and wellbeing as a whole.[2]

Research has further shown that sleep disturbance can produce a range of cognitive impairments.[21, 22] While this area is largely unexplored in children, a study by Dahl has shown the main cognitive effects to be difficulties with focussed attention and modulating impulses and emotions.[22] Such symptoms, in some instances, may resemble the presentation of attention deficit hyperactivity disorder (ADHD), which is in stark contrast to the presentation of sleep disturbance in adults who tend to report feelings of severe lethargy and tiredness. Dahl noted however, many adults use stimulants in the form of caffeine to offset the effects of sleep deprivation; and so on some level are mirroring the presentation of their child counterparts.[22] These findings were supported in a review by Stores[18] who suggested that sustained attention, creativity and abstract thinking were the main cognitive victims of sleep deprivation in children. Ultimately, the cognitive effects of sleep deprivation may have considerable implications for school performance.

It is well documented that sleep loss can adversely affect behaviour and mood.[7, 18] A meta analysis by Pilcher and Huffcut,[21] conducted in the adult population, reported that both mood and cognitive performance can be affected by sleep. Populations of children who experience poor quality of sleep have also been studied and a range of mood and behavioural difficulties have been reported.[8, 23]

The effects of children's sleep disturbance are also apparent within the family unit itself. Research has shown sleep deprivation in parents, parental depression,

stress, marital discord and negative parent-child interactions correlate with sleep disturbance in children.[10, 18, 24, 25]

**2.6 Classification Systems**

Presently, there are three main diagnostic classification schemes in relation to sleep disorders used in both research and in practice, the Diagnostic and Statistical Manual,[26] the International Classification of Sleep Disorders[27] and the International Classification of Disorders.[28]

The International Classification of Sleep Disorders (ICSD-2)[27] has a number of advantages over the DSM and ICD systems. In particular, it is more comprehensive, informative, logically structured, and up to date. Its major domains include (1) dyssomnias, (2) parasomnias, (3) sleep disorders associated with mental, neurological, or other medical disorders in which sleep disturbance is a major feature, and (4) proposed sleep disorders which require further investigation.[18] In all over 80 different sleep disorders are described in this instrument. The ICSD-2 is a complex classification system however, and is often rejected for this very reason. A further difficulty with the ICSD-2 is its heavy reliance on objective diagnoses. As an objective measure the ICSD-2 suggests polysomnography (PSG); however, particularly in the paediatric population, this has significant ethical and practical implications.

Nevertheless, all of the current classification systems are essentially adult based, with little thought and consideration for their paediatric counterparts, and they contain limited recognition of the differences between adults and children in the presentation and occurrence of sleep disorders.[16] Moreover, the systems are not necessarily consistent with one another, and lack sufficient detail to be clinically useful in some instances.[29]

Ultimately, therefore, the diagnostic process remains to be idiosyncratic, and is largely dependent on the clinician's training, experience and confidence. Moreover, the lack of service provision for children, as reported by the British Sleep Society (BSS), further compounds the entire process making it very difficult for parents to receive the help they need.

## 2.7 The 'Problem' with Diagnosis

Despite a recent flurry of activity into sleep in the paediatric population, limited knowledge makes a global and unitary definition of childhood sleep disorders difficult to formulate and subject to significant variability amongst different clinicians and researchers.

Several explanations are offered to account for this. First, in contrast to the adult literature, the various forms of paediatric sleep disorders are not adequately distinguished from one another rendering "misdiagnosis and inadequate diagnosis of sleep disorders in children...commonplace.[18]" For example excessive sleepiness may be construed as an idle temperament or depression,[18] while irritability, and difficulties focusing both attention and modulating impulses may be taken to be ADHD. This is particularly problematic given that an accurate diagnosis is essential in order that the appropriate treatment choice be made.

Secondly, disturbed sleep in children is often viewed as a difficulty largely experienced by the parent, and not typically a complaint of the child themselves.[3] It is generally the parent who struggles with the child at night to get them into their bed, rises during the night to comfort their child, and then labours to rouse them and get them ready for the following day's activities.[30]

Lastly, sleep disorders can be difficult to diagnose, since there is no specific test that is diagnostic in nature. Rather, such a diagnosis remains to be a clinical determination, based primarily on a detailed assessment of the presenting problem and its history. Children, particularly younger ones, may struggle to verbally express their difficulties due to their limited abilities in comprehension, linguistic skills, and acquiescence bias. In addition, the manifestations of a sleep disorder have a strong developmental component, hence are largely defined by age rather than sleep pattern.[31] Therefore, report by proxy, usually the primary caregiver, is employed in the diagnostic process. Despite the informative value of proxy reports, over-reliance on this methodology remains to be one of the major limitations in the field of child sleep research.

## 2.8 Limitations of Report by Proxy

Caregiver reports on their child's sleep suffer from a number of serious shortcomings as caregiver's perceptions of their child's sleep-patterns may be biased by factors unrelated to their child's actual sleep behaviours.[32] Such factors may include the way the child behaves the following day, the parents own fatigue and metal health, and their own attitudes and beliefs about sleep. In addition, studies which have looked to compare information gathered from a variety of informants highlight how poorly these perspectives align[14,33]

Daytime behaviour and caregiver perceptions may also have a significant effect on caregiver perceptions of sleep disturbance in their child. A novel study by Wiggs and Stores[25] investigated the factors which affect caregiver reports of sleep patterns in groups of children with severe learning disabilities. The authors separated participants into three groups; those with no sleep problems (NSP), those with unrecognised sleep problems (USP) and those with recognised sleep problems (SP). The authors reported the USP and NSP groups to be similar to one another reporting themselves to be less stressed, have increased perceived control over their child's sleep pattern, and reporting fewer daytime behaviour problems in comparison to the SP group. Interestingly, the authors noted that USP mothers have a realistic awareness of the existence of sleep problems in their child, however differ from their SP counterparts in that they have a number of additional protective factors which enable the mothers to tolerate their child's sleep pattern. Unfortunately, this study suffered from a number of methodological limitations including small sample size and employed a non-standardised measure to investigate caregiver perceived control.

## 2.9 Caregiver Psychopathology

The study of sleep in children and its relationships with caregiver mental and physical health has been fairly extensive. Sleep disorders in childhood have been repeatedly and consistently associated with maternal depression, post natal depression (PND), increased stress levels, ambivalent feelings toward the child, and a sense of incompetence.[5,11,34] Poor maternal mental health not only impacts on maternal quality of life therefore, but also adversely effects child cognitive, emotional and behavioural development.[34,35]

## 2.10 Temperament

The temperament of a child may influence perceptions of sleep behaviour in a number of ways. For example, in a study of 6 month old's Carey[36] reported that infants with sleep difficulties also had a more 'difficult' temperament and were less able to self-soothe than their 'easy' temperament peers. This finding has been replicated in a number of more recent studies.[37,38] Of note, temperament may have a bidirectional effect influencing parental relations and attitudes towards the child as well as influencing the child on a personal level.[3] Hence, parental behaviours and attitudes regarding sleep may be influenced by child temperament. Of note, while links between sleep disturbance and temperament have been documented these associations have been small in magnitude and of a varying profile.[39]

## 2.11 Dysfunctional Beliefs and Attitudes about Sleep

Beliefs and attitudes regarding sleep have been shown to play a significant role in triggering and maintaining a number of psychological illnesses, and sleep disorders are no exception. An example of a dysfunctional belief about sleep might include 'eight hours of sleep is absolutely necessary for functioning'. Research in this area suggests that people with sleep problems worry more about the consequences of not sleeping and report more dysfunctional thoughts than those without sleep disturbance.[40] It is likely therefore that the attitudes and beliefs of caregivers of children with sleep disorders may play a role in their perception of their child sleep patterns. That is to say, caregiver reports of their child's sleep behaviours may be influenced by their own attitudes and beliefs about sleep, and not solely based on the behaviours themselves.

In conclusion, these studies demonstrate that caregivers do not necessarily base their opinions about their child's sleep-behaviours on the actual behaviours themselves, but may take into consideration other factors such as the child's daytime behaviour, signals from the child during the night that they have woken, as well as being influenced by their own mental health, perceptions and beliefs about sleep itself. Eliciting perceptions of experience directly from the children themselves therefore, and not through proxy informants alone, is not only important but is integral to gaining a deeper understanding of their sleep

behaviours; and may be seen as a complementary method to the traditional route to diagnosis of sleep disorders in the paediatric population.

### 2.12 Children's Drawings

Child-centred approaches have been gaining favour in recent years in almost every domain of health care, from service development to treatment provision. Dreissnack[41] suggests *"children will tell us what they are up to and what they are about if we set the stage and listen."* Nevertheless, few methods are available which elicit children's voices, particularly those of young children whose cognitive abilities and command of language remains limited.

In a meta analysis by Dreissnack[41] the author reported strong and definitive results that support the use of drawings to facilitate communication with children. Furthermore, Butler and colleagues[42] also encourage the employment of a drawing methodology following their 1995 study in which children who drew their responses to direct questions were found to be accurate and reported more information than children verbally communicating their answers.

Enabling children to participate using artwork as a means of communication offers a novel solution, being both cost effective yet powerful, and has recently gained favour in the research arena. Drawing is a natural and spontaneous activity that children engage in and one that does not require skill or verbal ability in order to be expressive. Additional advantages of using artwork as a clinical tool with children includes the ease of administration as well as the enjoyment that children derive from participating in such a non-threatening and empowering activity[43,44] Moreover, a study by Arrington[45] indicated that employing such techniques serves as a relaxant, and reduces defensiveness.

### 2.13 Research Studies Utilising Drawing Methodology in Children

To date children's drawings have been used to investigate asthma,[46] sickle cell disease,[47] abuse,[48] pain,[47] plastic surgery,[49] to generate concepts of health[50] and the effects of living with civil unrest.[51]

Stafstrom and colleagues[52] considered whether drawings could aid in the differential diagnosis of headaches in a group of 226 children aged between 4-19 years. Compared with clinical interview, which was considered to be the 'gold standard' for migraine diagnosis, headache drawings were shown to have a high degree of specificity and sensitivity in differentiating migraine from non-migraine headaches, predicting the clinical diagnosis of migraine in 87.1% of cases. Moreover, whilst it might be expected that younger children's immature drawing skills may not allow for reliable diagnosis, this study did not confirm this hypothesis. Contrary to expectation, the authors reported that children below 8 years of age were slightly better at predicting their diagnosis through their drawings.

Despite such success in other populations, there has been no attempt to utilise children's drawings as an aid in paediatric sleep disorder diagnosis. Such a technique could be used to support a clinical diagnosis and guide therapeutic decision making. Children's drawings would be a simple, inexpensive tool for the diagnosis of sleep disorders and would both compliment and enhance the more traditional processes already in place.

### 2.15 Guidelines for Obtaining and Interpreting Children's Drawings

Rae[53] offers some important insights into the process of obtaining and analysing children's drawings. The author suggests that in the first instance it is imperative to establish rapport with the child, and encouragement should be offered for enthusiasm and effort rather than the quality of the work produced, with the entire process taking place in an environment largely free of distractions.

Rae further advocates that either concrete or abstract instructions are appropriate depending on the requirements of the researcher, although the researcher must be open and honest with the child regarding their purpose and ultimate use for the drawing. Regardless of the process that the researcher employs, it is important that this procedure is standardised and adopted for all of the clients.

Interpretation of children's drawings however is not so straight forward and carries along with it an element of subjectivity belonging to both the artist and the

interpreter.[49] This has been voiced as one of the major limitations of using this methodology.[50,54] Wales[55] however argues that as human beings all of our observations are themselves the product of our interpretations, thus subjectivity is not solely confined the interpretation of children's drawings. There are several indicators that reliably emerge throughout children's artwork, most notably exaggeration, colouring and accentuation.

Exaggeration of body parts and other objects in children's drawings is a very common form of expression, designed to call particular attention to positive or attractive topics, while a decrease in size is designed to act as a defence mechanism and is therefore representative of a negative or threatening object.[47,49,54,56-58] This interpretation has been called into question however as some authors argue that exaggeration may simply be a reflection of planning difficulties in the organisation of a drawing where many items are included, with the first item to be drawn at a distinct advantage as there are few constraints on space.[54] Others have argued that exaggeration effects are merely the consequence of a weak methodology. One of the earlier studies which has avoided many such problems, through the implementation of a tight methodological design, was that by Thomas and colleagues.[56] They asked children to copy an outline of a human figure, which was affectively laden, onto separate pieces of paper thus controlling for production, planning and detail inclusion difficulties which the children may encounter. The Thomas group reported children drew 'nice' figures larger than 'nasty' figures. Interestingly, when the group requested that the children draw the nice and nasty people on the same page this effect was reversed, with the nasty figure represented larger than the nice person. The group went on to repeat this experiment but this time asking children to draw 'magic' apples capable of being either nice or nasty. It was reported that children drew 'nice' apples larger although a reduction in the size of 'nasty' apple was not exhibited consistently. Similar results were also reported by Burkitt et al.[59,60] Clearly, therefore, the exaggeration effect is an important one to consider although its direction remains to be disputed, and may be related to the actual method of collecting the drawings.[54]

Colour choice has frequently been debated throughout the literature as being indicative of the feelings a child holds about the subject they have drawn.[61] These opinions have largely been borne out of clinical judgement and until recently few controlled clinical trials existed. In an innovative study by Burkitt and colleagues[61] colour choices for affectively laden objects was investigated. In this large scale study of 4-11 year olds, participants were asked to choose 1 colour of crayon to colour in a line drawing of a man, a tree or a dog. During the first testing session children were asked to rate 10 colours of crayons in order of preference. In the second session participants were asked to colour in outlines of figures which had been characterised as neutral, nice or nasty. Results from this study demonstrated that children employed more preferred colours for the positively characterised condition, and least preferred colours for the negatively characterised condition. Furthermore, a notable trend emerged over all age groups, gender and drawing topic. Darker colours, namely brown and black, tended to be chosen by children to depict a negatively characterised object. Contrastingly, a range of both primary and secondary colours were used for both neutral and positively characterised objects. These findings have further been confirmed in the absence of a drawing outline where children produced their own drawings.[59] In addition, investigations of pain have reported its depiction through the use of black and red colours,[62] as well as 'darkness'.[47] Findings such as these imply that children's use of colour in drawings is affectively laden.

Accentuation with words is common in children's drawings and suggests that the artist may not trust that the picture alone will convey the message and be completely understood.[49]

## 3. Aims and Research Questions

### 3.1 Aims

The aim of this research project is to investigate the usefulness of employing children's drawings in the diagnostic process of sleep disorders.

### 3.2 Research Questions

The project will address the following questions:

1. Are the 'sleep' drawings of children a useful diagnostic tool?
2. Is drawing as a methodology sensitive to sleep disorder diagnosis?
3. Is drawing as a methodology specific to sleep disorder diagnosis?
4. What is the positive predictive value (PPV) of drawing methodology for diagnosing a sleep disorder in a child?

### 3.3 Hypotheses

On the basis of the existing literature a number of non-directional hypotheses were proposed:

1. The 'sleep' drawings of children with a normal sleep pattern will differ from the 'sleep' drawings of those children in the clinical sample with a disturbed sleep pattern.
2. The 'furniture' drawings of children with a normal sleep pattern will not differ from the 'furniture' drawings of those children in the clinical sample with a disturbed sleep pattern.
3. Children with a disturbed sleep pattern will score higher on the Strengths and Difficulties Questionnaire (SDQ) than the normal sleep pattern group.
4. Caregivers of children in the clinical sample with a disturbed sleep pattern will score higher on the Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS-10) than the normal sleep pattern group.
5. Caregivers of children with a disturbed sleep pattern will score higher on the Hospital Anxiety and Depression Scale (HADS) than the normal sleep pattern group.
6. The 'sleep' and 'furniture' drawings in the disturbed sleep pattern group will differ within participants in size and colour of the objects.

## 4. Method

### 4.1 Participants

All participants in this study will be children aged between 4 and 10 years.

### 4.2 Recruitment Procedures

All children taking part in the study will be recruited largely from nursery and primary schools, and will have responded to an advertisement. Appropriate consent will have been gained from the nursery / primary schools prior to displaying the recruitment posters. The advertisement will include contact details (phone number and email address) of the researcher. Caregivers interested in the study will be asked to contact the researcher. An initial phone consultation will take place with the caregivers, in which the researcher will socialise the caregiver to the study as well as asking a number of quick questions regarding exclusion criteria (see section 4.3). Should caregivers wish to proceed with the study at this stage, and meet inclusion criteria, an initial appointment will be agreed and an information sheet sent out for both the caregivers and their child. All participants will be seen in their nursery or school environments. Visits will be pre-arranged at a time which is mutually convenient. Appropriate consent from the school/nursery will have been obtained prior to any appointments being arranged. A safety schedule has been devised and will be used for each visit.

### 4.3 Inclusion and Exclusion Criteria

Children with severe cognitive or developmental delays or those with physical handicaps, which would preclude them from drawing, will not be invited to participate. In this way this study is biased toward children who are cognitively able to understand the instructions and comply with the task.

In addition, children must be able to wear the actigraphy watches for a period of 1 week therefore, children diagnosed with either ADHD or epilepsy will also be excluded from this study.

### 4.4 Measures

1. Demographic Profile: Information form

| | | |
|---|---|---|
| 2. | Sleep Assessment: | Clinical Sleep History Interview<br>Actigraphy Data<br>Child 'Sleep' and 'Furniture' Drawings |
| 3. | Caregiver Assessments: | Strengths and Difficulties Questionnaire (SDQ)<br>Hospital Anxiety and Depression Scale (HADS)<br>Dysfunctional Beliefs and Attitudes about Sleep (DBAS 10) |

Other measures were also considered for use in this study, in particular the Stores and Wiggs Children's Sleep Disturbance Index. However, those assessments chosen were considered most appropriate for this research.

### 4.4.1 Demographic Profile

A demographic form, designed by the author, will include questions asking about both the caregiver and the child.

### 4.4.2 Clinical Sleep History Interview

A clinical sleep interview will be conducted with caregivers to provide subjective assessment of sleep disturbance and provide qualitative information about sleep-related behaviours. The clinical sleep interview[63] will be used to gather the appropriate information.

### 4.4.3 Actigraphy

Numerous authors have argued that non-intrusive objective measures of sleep should be employed for research purposes, as a complementary method to subjective assessments.[31,64,65] Over the last few years activity based sleep monitoring, more commonly referred to as actigraphy, has established itself as a reliable method to investigate sleep-wake patterns in children and has also been shown to effectively differentiate between normal and disturbed sleep-wake patterns of adults, children and infants.[32,64]

An actigraph monitoring device contains a small computerised movement detector which records periods of activity. The actigraph translates these periods of motion into a numeric representation. The actigraph itself takes the form of a watch which is usually worn on the wrist, however as this can be problematic in children, and it can therefore also be attached to the ankle. Thus, the device offers a way to record a child's sleep-wake cycle, yet does not affect the child's natural sleep environment. Validation studies comparing actigraphy to polysomnography, which is considered to be the 'gold standard' in sleep disorder research, have reported high concordance rates in both the general and clinical population. [32,64] For these reasons actigraphy is seen as a valid, non-intrusive and cost-effective objective measure, which is not only appropriate but is avidly encouraged for use in the research arena.[3,6]

### 4.4.4 Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS 10)

In 1993, Morin[66] published his Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS). The DBAS scale is extremely useful in clinical practice as it helps to identify particular, salient, irrational, and often affect-laden thoughts that intrude prior to sleep onset. A shorter 10 item scale (DBAS-10) was developed by Espie and his colleagues[67] allowing for quick and easy administration. This questionnaire consists of 10 statements with an analogue scale for the responder to state whether they strongly agree or strongly disagree. In terms of psychometric properties the DBAS-10 correlates highly with the original measure and demonstrates satisfactory internal consistency. This measure will be administered to caregivers to collect information regarding parental attitudes and beliefs about sleep.

### 4.4.5 Strengths and Difficulties Questionnaire (SDQ-Caregiver)

This scale was chosen as a measure of the child's daytime behaviour. The SDQ is a brief emotional and behavioural screening questionnaire containing 25 items assessing 5 scales namely emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour.[68] The questionnaire can be completed by caregivers for 4-16 year old children, and a self-report version is also available for children 11-16 years. For the purposes of this study only the caregiver report form will be employed.

### 4.4.7 Hospital Anxiety and Depression Scale (HADS)

This questionnaire was selected as a brief measure of caregiver mental health. The HADS is a self-report questionnaire consisting of 14 questions, which looks at symptoms of anxiety and depression.[69] Although initially designed for use in hospital settings, it has been extensively used in other settings and on a diverse population range.

## 4.5 Procedure

The researcher will conduct all interviews with caregivers and their children at their school or nursery. Primary schools and nursery schools in both Edinburgh and Glasgow will be approached in the first instance, and consent to display the recruitment posters and conduct the interviews at school/nursery will be gained from the appropriate authorities.

Session 1: At the first appointment children and their caregivers will be socialised as to the purposes of the study and what would be involved. Written informed consent from caregivers, and will be sought at this point.. Informed assent from children will also be sought where appropriate. Caregivers will be provided with an actigraph watch and shown how to use this piece of equipment both effectively and appropriately. Written instructions were also provided to caregivers which show the correct use of the actigraph. Actigraphy will be utilised for 7 days and nights. An initial interview[63] will be conducted, and caregivers will also be provided with the demographic form, HADS and SDQ to complete at this time. A second appointment will be arranged with the family at this point.

Session 2: At the second appointment the child will be provided with a blank, unlined piece of white paper (A4 size) and a pack of coloured crayons. At this time the child will be asked to "Please draw a picture of a bed". To minimise bias, no leading questions or additional instructions will be given. The child will be allowed unlimited time to complete their drawing. The participating child will neither be encouraged nor prohibited from providing additional commentary, either verbally while working on his or her picture or written down on the picture itself. Once the drawing is completed, the child will be provided with another blank, unlined piece of white paper (A4 size). This time the child will be asked to

"Please draw a picture of a dinner table". The same procedure as adopted for the 'sleep drawing' will be followed here. The drawings will be completed in a counterbalanced order, with half of the children in the sample asked to draw the 'furniture' drawing first, and half the 'sleep' drawing, thus controlling for any order effects. At this appointment the actigraphy watch will also be collected from the caregivers. Following the completion and collection of the two drawings the caregiver will be asked to complete the DBAS 10.

At the end of the second session the family will be debriefed and thanked for their participation in the study. Any questions arising from the study will be discussed at this point also. Children will be provided with a sticker and a certificate illustrating their involvement and thanking them.

General feedback from the study will be sent out to participants of the study following their analysis and write up, should they so request it.

The actigraphy data will be analysed independently by an experienced researcher who will be blind to the clinical history. The raters will also be asked to decide whether the child has a sleep disorder based on this data.

Each child will therefore be assigned 2 sleep disorder diagnoses independently, one based on data recorded from the actigraph and another on the basis of a clinical history by caregiver report.

**4.6 Design**

This study will employ a mixed group design, with two groups of children; a control sample of children with a normal sleep pattern, and a clinical sample of children with a disturbed sleep pattern.

**4.7 Justification of sample size**

In order to conduct an a-priori sample size calculation number of variables must be known, these include effect size (f), statistical significance level ($\alpha$), and power

(β). For the purposes of this study $\alpha = 0.05$ and $\beta = 0.6$.

To date no studies have utilised a drawing methodology in the paediatric sleep disorder population, therefore a conservative estimate of a medium effect size will be adopted (f=0.5).

Other studies in this area have varied greatly in their sample sizes ranging from a total of 30[47] to 226 participants.[52]

Using the G * Power 3 software programme[70] a total sample size of 82 was calculated, with 41 participants in each group. See Table 1 for details.

***Insert Table 1 Here***

**4.9 Settings and Equipment**

All interviews and data collection will take place in the participants' nursery or school environments. It is thought that this study would have more ecological validity and that children would feel more at ease in familiar settings and therefore would feel free to be expressive in their drawings.

**4.10 Data Analysis**

The data gathered will be analysed using the Statistical Package for the Social Sciences (SPSS) for Windows Version 15.0 (SPSS Inc., Chicago, IL).

Inter-rater reliability will be assessed using Cohen's kappa (κ) statistic. κ.

Data will be screened for parametric assumptions. All dichotomous variables will be examined using Chi Square analysis and a mixed group ANOVA will be used to examine within and between group differences. Additionally, Spearman Rho correlations and regression analysis will be used to examine the relationship between variables.

## 11. References


1. Dahl RE. Sleep disorders. Child and Adolescent Psychiatric Clinics of North America 1996:5:543–767.
2. National Sleep Foundation. Sleep-Wake Cycle: Its Physiology and Impact on Health. www.sleepfoundation.org
3. Ferber R, Kryger M. Principles and Practice of Sleep Medicine in the Child. WB Saunders Company, 1995.
4. Pressman MR, Orr WC. Understanding Sleep: The evaluation and treatment of sleep disorders. American Psychological Association: Washington DC, 1997.
5. Sadeh A, Flint-Ofir E, Tirosh T, Tikotzky L. Infant Sleep and Parental Sleep-Related Cognitions. Journal of Family Psychology 2007:21(1):74–87.
6. Sadeh A, Raviv A, Gruber R. Sleep Patterns and Sleep Disruptions in School-Age Children. Developmental Psychology 2000:36(3):291-301.
7. Dahl RE. The development and disorders of sleep. Advances in Pediatrics 1998:45:73-90.
8. Stores G, Wiggs L. Clinical services for sleep disorders. Archives of Disease in Childhood 1998:79:495-497.
9. Mindell JA. Empirically supported treatments in pediatric psychology: bedtime refusal and night wakings in young children. Journal of Pediatric Psychology, 1999:24(6):465-481.
10. Armstrong KL, Quinn RA, Dadds MR. The sleep patterns of normal children. Medical Journal of Australia 1994:161:202-206.
11. Lam P, Hiscock H, Wake M. Outcomes of Infant Sleep Problems: A Longitudinal Study of Sleep, Behavior and Maternal Well-Being. Pediatrics 2003:111:e203-e207.
12. Rona RJ, Li L, Gulliford MC, Chinn S. Disturbed sleep: effects of sociocultural factors and illness. Archives of Disease in Childhood 1998:78:20–25
13. Kahn A, Van de Merckt C, Rebuffat E, Mozin MJ et al. Sleep problems in healthy preadolescents. Pediatrics 1989:84:542–546.

14. Paavonen EJ, Aronen ET, Moilanen I et al. Sleep problems of school-aged children: a complementary view. Acta Paediatrica 2000:89:223-228.
15. Butler NR, Golding J. From birth to five. A study of health and behaviour of Britain's five-year-olds. London: Pergamon, 1986.
16. Stores G. A Clinical Guide to Sleep Disorders in Children and Adolescents. Cambridge University Press, 2001.
17. Worthman CM, Melby MK. Toward a comparative developmental ecology of human sleep. A comparative developmental ecology. Emory University. In: Adolescent Sleep Patterns: Biological, Social, and Psychological Influences, M.A. Carskadon, ed. New York: Cambridge University Press,2002:69-117.
18. Stores G. Children's sleep disorders: modern approaches, developmental effects, and children at special risk. Developmental Medicine and Child Neurology 1999:41:568-573.
19. Stores G. Misdiagnosing sleep disorders as primary psychiatric conditions. Advances in Psychiatric Treatment 2003:9:69–77.
20. Guilhaume A, Benoit O, Gourmeten M, Richardet JM. Relationship between sleep stage IV deficit and reversible HGH deficiency in psychosocial dwarfism. Pediatric Research 1982:16:299–303.
21. Pilcher JJ, Huffcutt AI. Effects of sleep deprivation on performance: a meta-analysis. Sleep 1996:19:318–326.
22. Dahl RE. The Impact of Inadequate Sleep on Children's Daytime Cognitive Function. Seminars in Pediatric Neurology 1996:3(1):44-45.
23. Stradling JR, Thomas G, Warley ARH, William P, Freeland A. Effects of tonsillectomy on nocturnal hypoxaemia, sleep disturbance and symptoms in snoring children. Lancet 1990:335:249–253.
24. Zuckerman B, Stevenson J, Bailey V. Sleep problems in early childhood: Continuities, predictive factors, and behavioral correlates. Pediatrics 1987:80:664–671.
25. Wiggs L, Stores G. Factors affecting parental reports of the sleep patterns of children with severe learning disabilities. British Journal of Health Psychology 1998:3:345-359.

26. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders DSM-IV-TR (Text Revision). American Psychiatric Publishing Inc.; 4th Ed Text Revision edition, 2000.
27. American Sleep Disorders Association. International Classification of Sleep Disorders (ICSD-2): Diagnostic and Coding Manual. Rochester, MN: American Sleep Disorders Association, 2005.
28. World Health Organisation. International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10), 1990.
29. McCrae CS, Lichstein KL. Secondary insomnia: diagnostic challenges and intervention opportunities. Sleep Medicine Reviews 2001:5(1):47–61.
30. Hansen DE, Vandenberg B. Neuropsychological Features and Differential Diagnosis of Sleep Apnoea Syndrome in Children. Journal of Clinical Child Psychology 1997:26(3):304-310.
31. Ferber R. Childhood Sleep Disorders. Neurologic Clinics 1996:14(3):493-511.
32. Sadeh A, Lavie P, Scher A, Tirosh E, Epstein R. Actigraphic home-monitoring sleep-disturbed and control infants and young children: A new method for pediatric assessment of sleep–wake patterns. Pediatrics 1991:87:494–499.
33. Owens JA, Spirito A, McGuinn M, Nobile C. Sleep habits and sleep disturbance in elementary school-aged children. Developmental and Behavioral Pediatrics 2000:21:27–36.
34. Bayer JK, Hiscock H, Hampton A, Wake M. Sleep problems in young infants and maternal mental and physical health. Journal of Paediatrics and Child Health 2007:43:66–73.
35. Hiscock H, Bayer J, Gold L, Hampton A, Ukoumunne O, Wake M. Improving infant sleep and maternal mental health: a cluster randomised trial Archives of Disease in Childhood 2007:92:952-958.
36. Carey WB. Night Waking and temperament in infancy. Journal of Pediatrics 1974:84:756-758.
37. Schaefer CE. Night waking and temperament in early childhood. Psychological Report 1990:67:192-194.

38. Sadeh A, Lavie P, Scher A. Sleep and temperament: Maternal perceptions of temperament of sleep disturbed toddlers. Early Education and Development 1994:5:311-322.
39. Scher A, Tirosh E, Lavie P. The Relationship between Sleep and Temperament Revisited: Evidence for 12-month-olds: A Research Note. Journal of Child Psychology and Psychiatry 1998:39(5):785-788.
40. Carney CE, Edinger JD, Manber R, Carson MA, Segal ZV. Beliefs about sleep in disorders characterized by sleep and mood disturbance. Journal of Psychosomatic Research 2007:62(2):179-188.
41. Driessnack M. Children's Drawings as Facilitators of Communication: A Meta-Analysis. Journal of Pediatric Nursing 2005:20(6):415-423.
42. Butler S, Gross J, Hayne H. The effect of drawing on memory performance in young children, Developmental Psychology 1995:31(4):597–608.
43. Bradding A, Horstman M. Using the write and draw technique with children. European Journal of Oncology Nursing 1999:3(3):170-175.
44. Stafstrom CE, Havlena J. Seizure drawings: insight into the self-image of children with epilepsy. Epilepsy and Behavior 2003:4:43–56.
45. Arrington D. Home is where the art is. Springfield, IL: Charles C. Thomas, 2001.
46. Gabriels RL, Wamboldt MZ, McCormick DR, Adams TL, McTaggart SR. Children's illness drawings and asthma symptom awareness. Journal of Asthma 2000:37:565–574.
47. Stefanatou A, Bowler D. Depiction of pain in the self-drawings of children with sickle cell disease. Child Care Health and Development 1997:23(2):135-155.
48. Sturner RA, Rothbaum F, Visintainer M, Wolfer J. The effects of stress on children's human figure drawings. Journal of Clinical Psychology 1980:36:324–31.
49. Lukash FN. Children's Art as a Helpful Index of Anxiety and Self-Esteem with Plastic Surgery. Plastic and Reconstructive Surgery 2002:109:1777.
50. Piko BF, Bak J. Children's perceptions of health and illness: images and lay concepts in preadolescence. Health Education Research Theory and Practice 2006:21(5):643-653.

51. Rudenberg SL, Jansen P Fridjhon P. Living and coping with ongoing violence: a cross-national analysis of children's drawings using structured ratings indices. Childhood 2001:8(1):31-55.
52. Stafstrom CE, Rostasy K, Minster A. The Usefulness of Children's Drawings in the Diagnosis of Headache. Pediatrics 2002:109:460-472.
53. Rae WA. Analyzing drawings of children who are physically ill and hospitalized, using the ipsative method. Child Health Care 191:20:198–207.
54. Cox M. Children's Drawings. Penguin Books: London, 1992.
55. Wales R. Children's pictures, in: R. Grieve and M. Hughes (Eds) Understanding children. Essays in honour of Margaret Donaldson (Oxford, Blackwell), 1990:140–155.
56. Thomas GV, Chaigne E, Fox TJ. Children's drawings of topics differing in significance: effects on size of drawing. British Journal of Developmental Psychology 1989:7:321-331.
57. Jolley RP, Vulic-Prtoric A. Brief report Croatian children's experience of war is not re-enacted in the size and placement of emotive topics in their drawings. British Journal of Clinical Psychology 2001:40:107-110.
58. Burkitt E, Barrett M, Davis A. The effect of affective characterisations on the size of children's drawings. British Journal of Developmental Psychology 2003:21:565–584.
59. Burkitt E, Barrett M, Davis A. The Effect of Affective Characterizations on the Use of Size and Colour in Drawings Produced by Children in the Absence of a Model. Educational Psychology 2004:24(3):315-343.
60. Burkitt E, Barrett M, Davis A. Drawings of Emotionally Characterised Figures by Children from Different Educational Backgrounds. International Journal of Art and Design Education 2005:24(1):71-83.
61. Burkitt E, Barrett M, Davis A. Children's colour choices for completing drawings of affectively characterised topics. Journal of Child Psychology and Psychiatry 2003:44(3):445-455.
62. Unruh A, McGrath P, Cunningham SJ, Humphreys P. Children's drawings of their pain. Pain 1983:17:385-392.
63. Morin CM, Espie CA. Insomnia: A Clinical Guide to Assessment and Treatment. Kluwer Academic: New York, 2003.

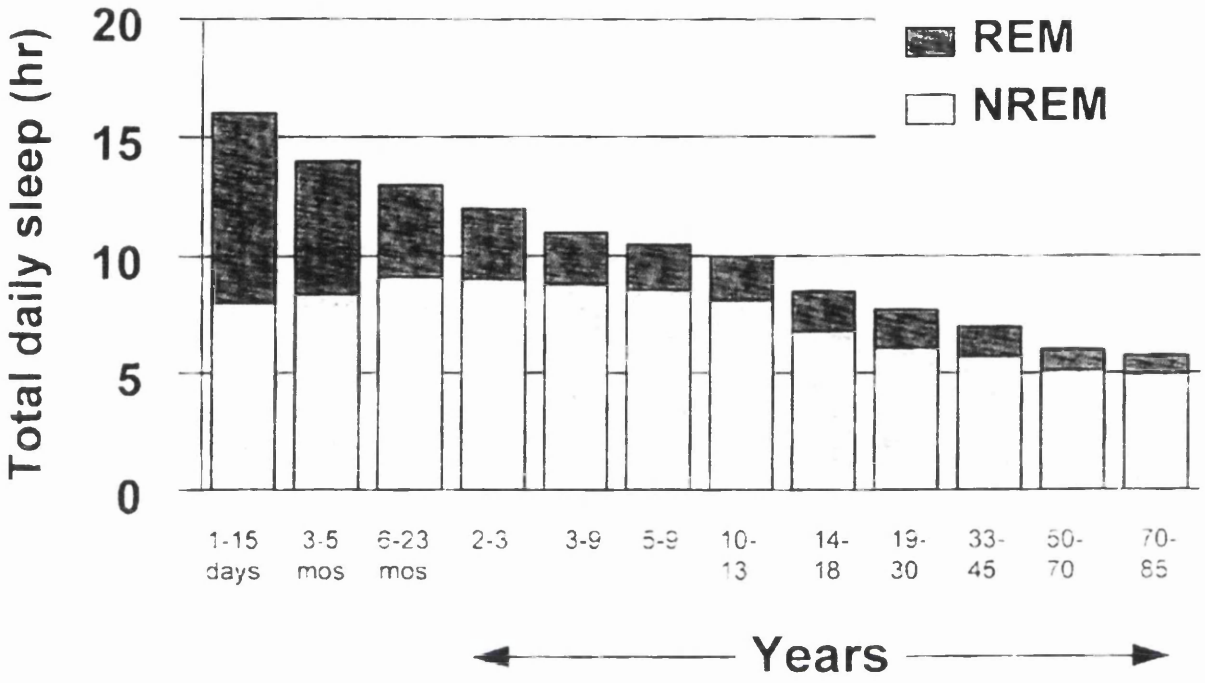
64. Sadeh A. Assessment of intervention for infant night waking: Parental reports and activity-based home monitoring. Journal of Consulting and Clinical Psychology 1994:62:63–68.
65. Sadeh, A. Evaluating night wakings in sleep-disturbed infants: A methodological study of parental reports and actigraphy. Sleep 1996:19:757-762.
66. Morin CM. Insomnia: psychological assessment and management. New York: Guilford Press, 1993.
67. Espie CA, Ingllis SJ, Harvey L, Tessier S. Insomniacs' attributions: psychometric properties of the Dysfunctional Beliefs and Attitudes about Sleep Scale and the Sleep Disturbance Questionnaire. Journal of Psychosomatic Research 2000:48:141–148.
68. Goodman R. The Strengths and Difficulties Questionnaire: A Research Note. Journal of Child Psychology and Psychiatry 1997:38:581-586.
69. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. Acta Psychiatrica Scandinavica 1983:67:361-370.
70. Faul F, Erdfelder E, Lang AG, Buchner A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods 2007:39:175-191.

**LIST OF TABLES AND FIGURES (Major Research Project Proposal)**

**Table 1: G* Power 3 Output from A Priori Sample Size Calculation**

| **t tests** - Means: Difference between two independent means (two groups) | | |
|---|---|---|
| **Input** | Tail(s) | Two |
| | Effect size d | 0.5 |
| | α err prob | 0.05 |
| | Power (1-β err prob) | 0.60 |
| | Allocation ratio N2/N1 | 1 |
| **Output** | Noncentrality parameter δ | 2.263846 |
| | Critical t | 1.990063 |
| | Df | 80 |
| | Sample size group 1 | 41 |
| | Sample size group 2 | 41 |
| | Total sample size | 82 |
| | Actual power | 0.608988 |

**Figure 1: Typical Sleep Requirements in Childhood**



## Appendix 2.2: Guidelines For Authors For Submission To '*SLEEP*'

### MANUSCRIPT SUBMISSION GUIDELINES

The Journal *SLEEP* is a publication of the Associated Professional Sleep Societies, LLC (APSS), a joint venture of the American Academy of Sleep Medicine and the Sleep Research Society. It is distributed to more than 6,500 readers.

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### SUBMISSION INSTRUCTIONS

All manuscripts must be submitted electronically. To submit an original manuscript, short note, editorial, rapid publication, review, book review, report, or letter to the editor, please go to **https://www.rapidreview.com/AASM/CALogon.jsp**. Complete instructions for the electronic submission process can be found on this site.

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### CATEGORIES OF MANUSCRIPTS/SCOPE

Original manuscripts, those that have not been published elsewhere except in abstract form, on any aspect of sleep will be considered. Manuscripts must not be concurrently submitted to any other publication, print or electronic.

The APSS is not responsible in the event that any manuscript or any part thereof is lost. Published manuscripts become the permanent property of the APSS and may not be published elsewhere without written permission from the APSS.

All accepted manuscripts are subject to manuscript editing for conciseness, clarity, grammar, spelling, and *SLEEP* style.

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### ESSENTIAL ELEMENTS

**Each submitted manuscript must address the following elements:**

**1. Conflict of Interest Disclosure Form**
Each author MUST disclose all potential conflicts of interest by submitting the Conflict of Interest Disclosure and Attestation of Authorship form for every submitted editorial, review, and manuscript. Substantive changes to the disclosure must be reported as they occur. Conflicts of interest will be reviewed by the Editor-In-Chief and the Journal SLEEP staff. This information will be listed within the article, but dollar amounts will not be included. No submission will be considered for review without complete disclosure. When completed and signed by all contributing authors, this form may be scanned and then uploaded as part of your manuscript submission, faxed to (708) 492-0943, or sent to APSS, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154.

**2. Authorship responsibility**
Each author should have participated sufficiently in the work and analysis of data, as well as the writing of the manuscript, for his or her name to be listed as a co-author and should attest to this responsibility. Authors should be limited to not more than ten.

**3. Ethics of investigation**
Authors should specify within the manuscript whether ethical standards were used in their research. If results of an experimental investigation in human or animal subjects are reported, the manuscript should include the notation that the institutional review board on human or animal research approved the study and that appropriate informed consent was obtained from human subjects. If approval by an institutional review board is not possible, then information must be included indicating that clinical experiments conform to the principals outline by the Declaration of Helsinki.

**4. Copyright Assignment and CME Educational Objective Form (Transfer of author copyright)**
A signed copy of the Copyright Assignment and CME Educational Objective form MUST be submitted with your manuscript. Include the title of the article being submitted, as well as the date. When completed and signed by all contributing authors, this form may be scanned and then uploaded as part of your manuscript submission, faxed to (708) 492-0943, or sent to APSS, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154.

**5. Learning objectives**
Authors should keep in mind the overall learning objectives of the journal *SLEEP*. After reading each issue, readers should be able to: 1) appraise sleep research in basic science and clinical investigation; 2) interpret new information and updates on clinical diagnosis/treatment and apply those strategies to their practice; 3) analyze articles for the use of sound scientific and medical procedures; and 4) recognize the inter-relatedness/dependence of sleep medicine with primary disciplines.

**The text of the manuscript should be in the following form:**

**a. Title page:** This page should include the title and subtitle; full first and last names, highest academic degrees, and institutional affiliations for all authors; the institution at which the work was performed; disclosure of the presence OR absence of financial support and off-label or investigational use; corresponding author's full address, phone and fax numbers and e-mail address.

**b. Abstract:** Each article must be preceded by a structured abstract. For clinical or original investigations, the abstract is limited to 250 words. The components of this format are (start each on a new line): Study Objectives; Design; Setting; Patients or Participants; Interventions; Measurements and Results; Conclusions. (For any of the previously mentioned components of the abstract not supplied, whether the information is unavailable or not supplied, it will be published as N/A (Not Available) for continuity purposes.) For smaller departmental articles, abstracts should not exceed 100 words. Please provide no fewer than three but no more than ten key words that reflect the content of your manuscript. For guidance consult the Medical Subject Headings - Annotated Alphabetic List, published each year by the National Library of Medicine and available in most hospital or institution libraries.

**c. Introduction:** State the object of research with reference to previous work.

**d. Methods:** Describe methods in sufficient detail so that the work can be duplicated, or cite previous descriptions if they are readily available.

**Each submitted manuscript must address the following elements:**

**e. Results:** Describe results clearly, concisely, and in logical order. When possible give the range, standard deviation, or mean error, and significance of differences between numerical values.

**f. Discussion:** Interpret the results and relate them to previous work in the field.

**g. Acknowledgments:** The minimum compatible with the requirements of courtesy should be provided.

**h. Legends:** Figure legends, numbered sequentially. Give the meaning of all symbols and abbreviations used in the figure.

**i. Tables:** ALL tables must be created using the table function in a word processor program and also must conform to a one- (3.25") or two-column (6.5") format. Prepare each table with a title above and any description below the table. Tables should be self-explanatory and should not duplicate textual material. They must be numbered and cited in consecutive order in the text, and must have a short title. Tables consisting of more than 10 columns are NOT acceptable. Previously published tables must have a signed permission from the publisher and complete reference data so that appropriate credit can be given.

**j. References:** References should be limited to no more than 60 citations for original articles. *SLEEP* complies with the reference style given in "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (see Ann Intern Med 1997;126:36-47 or online at http://www.acponline.org). Each reference should be cited in the text, tables, or figures in consecutive numerical order by means of Arabic numerals *outside* periods and commas and *inside* colons and semicolons. When 3 or more references are cited at one place in the manuscript, a hyphen should be used to join the first and last numbers of a series; commas should be used without spaces to separate other parts of a multiple-reference citation. The reference section should be included at the end of the text, following the sample formats given below. For abbreviations of journal names, refer to "List of Journals Indexed in Index Medicus" (available from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402, USA, DHEW Publication No. (NIH) 80-267; ISSN 0093-3821). Provide all authors' names when fewer than seven; when seven or more, list the first three and add et al. Provide article titles and inclusive pages. Accuracy of reference data is the responsibility of the author.

**Sample citations**

According to our previous work,[1,3-8,19]
The patients were studied as follows[3,4]:

**Sample references**

**Article:**
1. Meier-Ewert K, Matsubayashi K, Benter L. Propranolol: long-term treatment in narcolepsy-cataplexy. Sleep 1985;8:95-104.

**1. Conflict of Interest Disclosure Form**

2. Carskadon MA, Dement WC. Sleep loss in elderly volunteers. Sleep 1985;8:207-21.

**Book:**
3. Guilleminault C, Lugaresi E, eds. Sleep/wake disorders: natural history, epidemiology, and long-term evolution. New York: Raven Press, 1983.

**Chapter of a book:**
4. Coleman RM, Bliwise DL, Sajben N, et al. Epidemiology of periodic movements during sleep. In: Guilleminault C, Lugaresi E, eds. Sleep/wake disorders: natural history, epidemiology, and long-term evolution. New York: Raven Press, 1983:217-30.

---

**DETAILS OF STYLE**

Drug names: Use generic names in referring to drugs; trade names may be given in parentheses after the first mention, but the generic name should be used thereafter.

Abbreviations: Follow the list of abbreviations given in "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" (see section on References). For additional abbreviations, consult the Council of Biology Editors Style Manual (available from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814) or other standard sources.

Please provide on a separate sheet all abbreviations used with their full definition. Each should be expanded at first mention in the text and listed parenthetically after expansion.

---

**FIGURES AND ILLUSTRATIONS**

1. Figures should be black-and-white line drawings, professionally drawn and lettered. Avoid the use of screens and grayscale elements within a figure.

2. Figures and illustrations should be submitted in their final size, either 3.25 inches wide or 6.5 inches wide (see #4 below), and must be clear and easily readable.

3. Photographs, either black-and-white or color, are permitted, provided they fit the size requirements and are of high quality.

4. Most figures and illustrations should have a maximum width of 3.25 inches so they can fit into the confines of a single column. Only illustrations of particular importance and relevance, or figures that incorporate several smaller elements, should appear in two-column size, which is 6.5 inches wide.

5. Figures should be of a uniform style within the manuscript; the same typeface should be used for each figure (the font and size is Times New Roman 9 point) you submit, and figures of the same type-such as bar graphs-should appear similar and be proportioned to the same scale.

6. Figures will be evaluated both for scientific relevance and for design integrity, and authors may be asked to modify figures based on either of these concerns.

7. All figures and illustrations will be reproduced in "portrait" format; *SLEEP* cannot accommodate "landscape" presentation (i.e., no table or figure will be included that requires the reader to turn the journal sideways).

8. Each figure and illustration should be numbered and cited in consecutive numerical order within the text of the manuscript. A legend should be provided for each figure and illustration.

9. Reproduction in color must be approved by the Editor. Authors are required to pay a color fee for each color reproduction. The cost to the author will be $100.00 per figure/photo/illustration, and payment will be required before publication.

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**IDENTIFICATION OF PATIENTS**

Signed statements of consent by the individual, (parents or legal guardians for minors) the physician, and institution must accompany a photograph if there is a possibility the subject could be identified.

---

**REVIEW PROCESS**

Editors first determine if a submitted manuscript is suitable for review and publication. Manuscripts selected are then sent for peer-review to reviewers who are selected based on their expertise related to the particular manuscript. After reviews are in, a recommendation of accept, reject or revise (for further consideration) is made by the Associate Editor to the Editor in Chief, who makes the final decision.

Manuscripts are reviewed with due respect for the author's confidentiality. At the same time, reviewers also have rights to confidentiality, which are respected by the editors. The editors ensure both the authors and the reviewers that the manuscripts sent for review are privileged communications and are the private property of the author.

When submitting a manuscript for consideration for publication, authors may suggest the names of potential reviewers to invite and/or exclude.

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**EXPEDITED REVIEW PROCESS**

At the option of the authors, manuscripts previously peer-reviewed by SLEEP, but not accepted for publication may be considered for expedited review. An expedited review will consist of an analysis by the Editor of the previous critiques returned by SLEEP as well as an examination of the submitted manuscript. Using these documents, an initial decision of accept, reject or revision will be made without additional outside reviews. To obtain an expedited review, the corresponding author MUST request this in their cover letter to the Journal and upload the critiques returned

from SLEEP with their manuscript submission. The Editor will decide whether to conduct an expedited review or to proceed with the standard review process. If a decision is made to conduct a standard review, the author will be so informed and given the option to withdraw the manuscript without prejudice.

## PROOFING

Once a manuscript is accepted, it will be chosen for publication in an upcoming issue of *SLEEP*. Author(s) will be notified as to the assignment of their manuscript to an issue. Prior to issue assignment however, galley proofs will be sent to the corresponding author. These proofs will be emailed as a PDF file and the author will be expected to return their corrections or approval of these proofs within one week. It is the author's responsibility to keep their account in Rapid Review current and to notify the journal's administrative office of any changes in contact information after a paper has been accepted.

## RESUBMSSIONS

If a manuscript is returned to the author(s) for revisions, all resubmissions must follow the Instructions for Submitting a Manuscript and include the following:

1. Both a clean copy and a redline copy of the revised submission. NOTE: If the redline copy was created using "track changes" mode in Word, please create a PDF file of the redline version and upload the PDF file in Rapid Review. If you are not able to create a PDF file of your redline version, please use alternative font colors or highlighting tools in Word to show the redlined changes – not "track changes" mode.
2. You must also upload a letter (Corresponding Author's Rebuttal) responding to each of the points made by the reviewers.

The deadline for submission of a revised manuscript is four months from the date of the notice. There is no guarantee that a revised manuscript will be accepted for publication.

## REPRINTS

Upon request, ten complimentary glossy copies of the manuscript can be sent to the corresponding author; requests must be received within 30 days of publication. To order additional reprints, contact the editorial office for an order form. For non-author reprints contact the editorial office or download the order form from the journal web site.

## OTHER TYPES OF SUBMISSIONS

### Rapid Publication

Papers of sufficient scientific importance and interest to the clinical and research community that warrant a rapid publication process may be submitted under this category. The standard review and processing procedures used by the Journal *SLEEP*

are substantially accelerated such that a paper will move from original submission to final acceptance in about 3 weeks and to print publication in about 8 weeks. This process is now available to any study of major scientific importance. Our plan is to publish such studies in 8-12 weeks from the time of original submission with on-line availability being 3-4 weeks earlier. However, many papers that ultimately meet the standard for publication in *SLEEP* are not appropriate for rapid publication. Papers that, in the judgment of the Editor-in-Chief or in the judgment of the appropriate Deputy Editor, do not meet this criteria will be returned to the author without review (and may be re-submitted using the standard publication guidelines). Rapid publication is not a mechanism to have all papers reviewed more quickly, rather it is reserved for scientifically, highly meritorious work and this should be respected.

**Short Notes or Letters**

Short notes may be a maximum of 6 double-spaced, typewritten pages. One figure or one table may be added, and the bibliography may have a maximum of 10 references. Letters should be 1-2 double-spaced pages at most. A maximum of five bibliographical references is allowed.

**Reviews**

The Editorial Board invites reviews. The Review section may also include summaries of symposia presentations at national or international meetings. Editorial Board members review these invited submissions. Additions and changes may be requested of the author to better communicate the state of the art presented in the review. Books to be considered for review should be submitted to the Editor-in-Chief.

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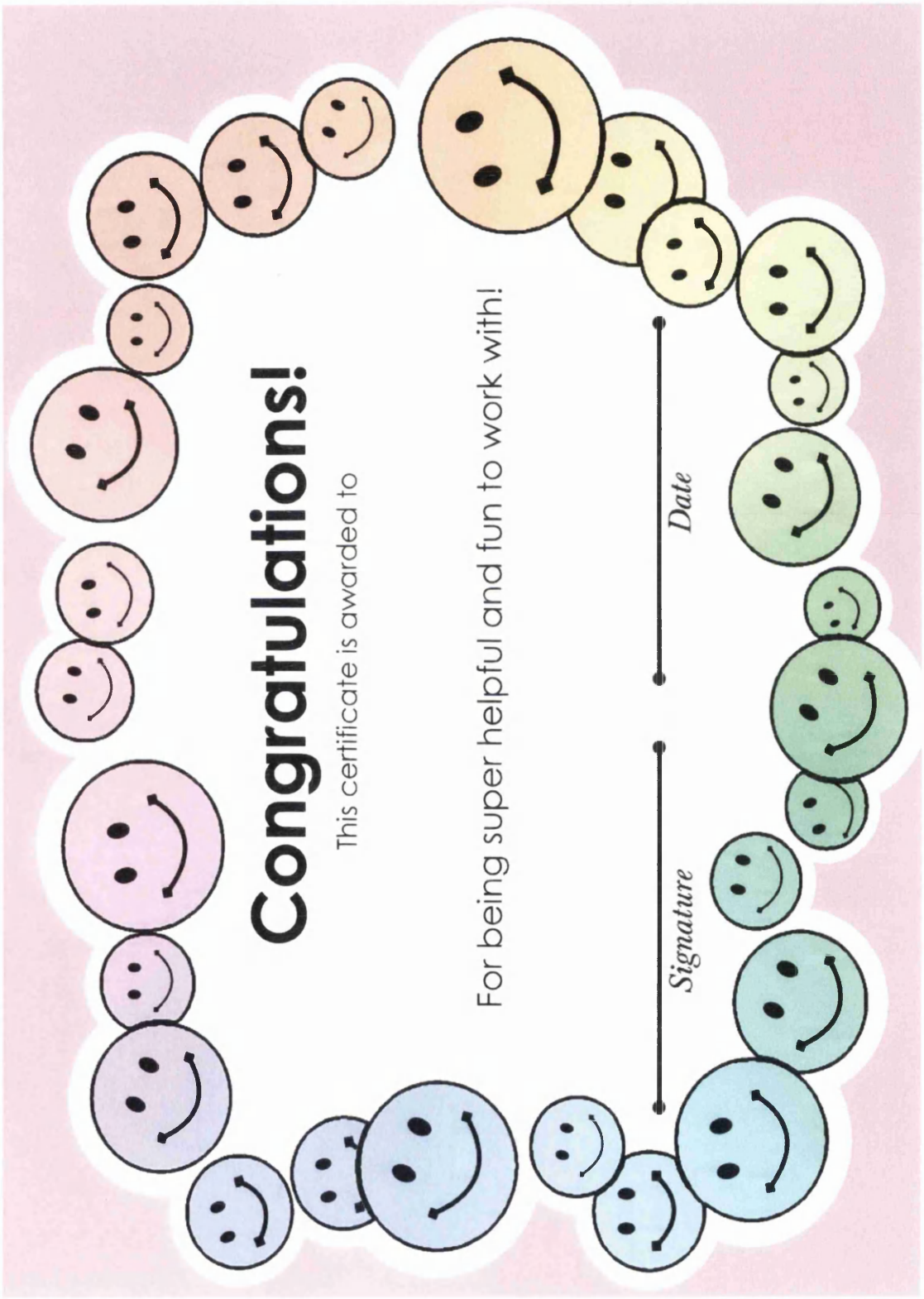
**CONTINUING MEDICAL EDUCATION CREDIT**

All peer-reviewed scientific papers accepted for publication in *SLEEP* may be designated for Category 1 continuing medical education credit. On the Copyright Assignment and CME Educational Objective Form, authors are asked to write a broad, one sentence learning objective to accompany their manuscript.

**Appendix 2.3: Children's Certificate**



## Appendix 2.4: Greater Glasgow NHS Ethics Committee Letter Of Approval

Primary Care Division

Research Ethics
R&D Directorate
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
www.nhsggc.org.uk

Miss Nicola Jane Clark
Trainee Clinical Psychologist
NHS Greater Glasgow and Clyde
Section of Psychological Medicine,
Division of Community Based Science
Academic Centre,
Gartnavel Royal Hospital
1055 Great Western Road,
Glasgow G12 0XH

Date 13 December 2007
Your Ref
Our Ref
Direct line 0141 211 3824
Fax 0141 211 3814
E-mail Liz.Jamieson@ggc.scot.nhs.uk

Dear Miss Clark

**Full title of study:** **Diagnosing Sleep Disorders in Children: Insights Using Children's Drawings.**
**REC reference number:** **07/S0701/128**

Thank you for your letter of 26 November 2007, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information was considered at the meeting of the Sub-Committee of the REC held on 13 December 2007. A list of the members who were present at the meeting is attached.

**Confirmation of ethical opinion**

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised.

**Ethical review of research sites**

The favourable opinion applies to the research sites listed on the attached form.

**Conditions of approval**

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

**Approved documents**

The final list of documents reviewed and approved by the Committee is as follows:

| *Document* | *Version* | *Date* |
|---|---|---|
| Application | | 14 September 2007 |
| Investigator CV | Ms N J Clark | 15 October 2007 |
| Protocol | Version 1 | |
| Questionnaire: Strengths and Weaknesses Questionnaire | Version 1 | |

D370787

| | | |
|---|---|---|
| Advertisement | Recruitment Poster Version 1 | |
| Advertisement | Version 2 | 14 December 2007 |
| Participant Information Sheet: PIS - Children | Version 2 | 14 November 2007 |
| Participant Information Sheet: Child Information Form | Version 1 | |
| Participant Information Sheet: Caregiver Information Sheet | Version 1 | |
| Participant Consent Form: Child Consent Form | Version 1 | |
| Participant Consent Form: Caregiver Consent Form | Version 1 | |
| Participant Consent Form: children | Version 2 | 14 November 2007 |
| Response to Request for Further Information | | 26 November 2007 |
| Letter from Glasgow City Council | | 16 November 2007 |
| Disclosure Scotland Form | | |
| Staff Profiling Sheet for Nicola Clark | | |
| DBAS-10 | | |
| HADS Scale | | |
| Clinical Assessment Interview | Version 1 | |
| Collaborator CV | Professor Colin Espie | |
| Supervisor's CV | Dr Jason Ellis | |

**R&D approval**

All researchers and research collaborators who will be participating in the research at NHS sites should apply for R&D approval from the relevant care organisation, if they have not yet done so. R&D approval is required, whether or not the study is exempt from SSA. You should advise researchers and local collaborators accordingly. Guidance on applying for R&D approval is available from http://www.rdforum.nhs.uk/rdform.htm.

**Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

**After ethical review**

Now that you have completed the application process please visit the National Research Ethics Website > After Review

Here you will find links to the following

a) Providing feedback. You are invited to give your view of the service that you have received from the National Research Ethics Service on the application procedure. If you wish to make your views known please use the feedback form available on the website.
b) Progress Reports. Please refer to the attached Standard conditions of approval by Research Ethics Committees.
c) Safety Reports. Please refer to the attached Standard conditions of approval by Research Ethics Committees.
d) Amendments. Please refer to the attached Standard conditions of approval by Research Ethics Committees.
e) End of Study/Project. Please refer to the attached Standard conditions of approval by Research Ethics Committees.

We would also like to inform you that we consult regularly with stakeholders to improve ( service. If you would like to join our Reference Group please email referencegroup@nationalres.org.uk .

**07/S0701/128** **Please quote this number on all corresponden**

With the Committee's best wishes for the success of this project

Yours sincerely

Liz Jamieson

**Liz Jamieson**
**Research Ethics Committee Co-ordinator on behalf of Dr Paul Fleming, Chair**

*Enclosures:* *List of names and professions of members who were present at t meeting and those who submitted written comments*
*Standard approval conditions*
*Site approval form*

Copy to: Mr. Brian Rae
R&D office for NHS care organisation at lead site

## Appendix 2.5: Research And Development Letter Of Approval

Acute Services Division

Research & Development Directorate
NHS Greater Glasgow and Clyde
The Tennent Institute
WIG, 38 Church Street
Glasgow
G11 6NT

NHS
Greater Glasgow and Clyde

Miss Nicola Jane Clark,
Trainee Clinical Psychologist,
NHS Greater Glasgow & Clyde,
Section of Psychological Medicine,
Division of Community Based Sciences,
Academic centre,
Gartnavel Royal Hospital,
Glasgow G12 0XH

Direct Line 0141 211 8548
Fax 0141 232 9516
Email mary.fraser@ggc.scot.nhs.uk

Date 17 January 2008

Dear Nicola Clark,

**Project Title: Diagnosing sleep disorders in children: Insights using childrens' drawings**

I am pleased to inform you that R&D management approval has been granted by NHS Greater Glasgow & Clyde Community and Mental Health Partnership, subject to the following requirements:

- You should notify me of any changes to the original submission, including copies of notification to ethics committee(s) and send regular, brief interim reports including recruitment numbers where applicable. You must also notify me of any changes to the original research staff and send CVs of any new researchers.
- Researchers covered in this approval are:- **yourself and Dr J. Ellis**
- Your research must be conducted in accordance with the Scottish Executive Health Department, *Research Governance Framework for Health and Community Care* (Second Edition, 2006) see Chief Scientist Website http://www.sehd.scot.nhs.uk/cso Local research governance monitoring requirements are presently being developed. This may involve audit of your research at some time in the future.
- You must comply with any requirements regarding data handling (Data Protection Act). Advice may be obtained from the Scottish Executive Confidentiality and Security Advisory Group for Scotland website http://www.csags.scot.nhs.uk/
- A final report, with an abstract which can be disseminated widely within the NHS, should be submitted when the project has been completed.

Do not hesitate to contact the R&D Office if we can be of any assistance.

We wish you every success with your project.

Yours sincerely

Mary Fraser

Dr Mary Fraser

## Appendix 2.6: Glasgow City Council Letter Of Approval

**Executive Director**
**Education and Social Work Services**
Margaret Doran

**Education and Social Work Services**
Glasgow City Council
Wheatley House
25 Cochrane Street
Merchant City
Glasgow G1 1HL

Phone Direct Line 0141-287-4946
Fax 0141-287 3795
Email john.scougall@education.glasgow.gov.uk

Website www.glasgow.gov.uk
Our Ref JS/Rsrch
Date 16 November 2007
If phoning please ask for John Scougall

Miss Nicola Clark
Trainee Clinical Psychologist
University of Glasgow
Section of Psychological Medicine
Academic Centre, Gartnavel Royal Hospital
1055 Great Western Road
GLASGOW
G12 0XH

Dear Miss Clark

**Proposed Research Project – Diagnosing Sleep Disorders in Children: Insight using children's drawings.**

Thank you for your completed research application form regarding the above along with your subsequent email giving further information relating to your research project.

I now write to advise you that this department has no objection to you seeking assistance from our primary schools regarding your project. I would confirm however that it is very much up to the Head Teachers to decide whether or not they participate and assist you in your research.

**A copy of this letter should be sent to the Headteacher when contacting the establishments.**

This approval is also on the condition that as there is pupil involvement regarding this project parental/guardian consent **must be requested, and given,** before such involvement. A further condition of this approval is that two copies of the final research findings are sent to me, at the above address, when completed.

I hope that this is helpful and that you have success with your project.

Yours sincerely

JOHN SCOUGALL
Principal Officer