Emotions Present in Dreams: A developmental index

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Abstract

Although children experience dreams from a very young age, there have not been comprehensive findings delineating the development of dreaming in childhood. It has been asserted that there may be a relation between the developmental changes in waking life, and the cognitive and emotional content of children's dreams. This exploratory study aimed to investigate the emotional content of dreams in preschoolers and slightly older school-age children. The study intended to determine whether a difference exists in the nature of emotional content of dreams between these two groups. Consequently, children's dream and emotion comprehension were evaluated. A group of 40 typically developing, English first-language speakers from a Grade R ($n = 20$) and Grade 2 ($n = 20$) class were interviewed. The emotional content of dream reports was assessed in relation to two emotion taxonomies, viz. Ekman and Friesen's model of basic emotions, and Panksepp's core emotions. Moreover, the presence of moral emotions in the reports of the two groups was contrasted. Two blind independent raters coded the data, which was then statistically analyzed by means of chi-square tests of contingency and t-tests. Results illustrated that dream and emotion comprehension is contingent on age, with Grade 2 participants exhibiting a higher degree of understanding that Grade R participants in each category. However, the nature of emotional content between groups did not differ markedly, with Grade R and Grade 2 participants reporting equal number of basic and core emotions in their dreams.

Keywords: dream content, Ekman basic emotions, Panksepp core emotions, moral emotions, child development

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Introduction

Intrinsically, dreams are laden with emotional features. They display waking life concerns, cognitive abilities, trait anxiety, and daily stressors (Huermann, Lyon, Heath, Fischer, & Potkar, 2009). Consequently, they are salient mental experiences for almost all adults and children. Therefore, research dealing with children's dreams plays an essential part in learning about their psychological development and about dreams in general (Colace, 2010). However, despite the significance and interesting nature of dreams, dream development and the emotional content of dreams in children remains an under-researched domain. The aim of this research was to begin to address this deficit with an exploratory study assessing dream comprehension, dream development and the emotional content of preschoolers' and slightly older children's dreams.

Dream Comprehension in Childhood

Although children experience dreams from a very young age, there have not been comprehensive findings delineating its development in childhood (Colace, 2010). The mixed results in the field may be due to the numerous methodological difficulties that surround the assessment of children's dream reports. In order to conduct dream research with children, one has to firstly ensure that their dream reports are credible. To achieve dream report credibility, participants should have an adequate understanding of what the word "dream" means. Moreover, establishing whether participants are able to distinguish between dream life and waking states is also essential in eliciting credible dream reports. This is necessary to reduce the likelihood of participants reporting events that might have occurred in waking states.

Dreams have been characterized as fictitious mental states that do not necessarily represent reality accurately (Woolley, 1995). From a western standpoint, adults usually regard dreams as unreal, internal and greatly subjective experiences. Young children, however, may not possess the "it's just a dream" conceptualization as yet. Consequently, there have been debates surrounding when children achieve an adult-like comprehension of dreaming (Meyer & Shore, 2001). Research has established that children aged 3 are able to distinguish between real and imaginary mental states (Domhoff, 2003; Murray, 1995; Woolley & Wellman, 1992). For example, young children are aware that dreams are unreal and less trustworthy experiences, because dreams may represent things that cannot occur in waking states

(see Piaget, 1929 as cited in Meyer & Shore, 2001; Woolley, 1995; Woolley & Wellman, 1995). However, numerous competing findings exist: for example, Shweder and LeVine (1975) argue that children are not able to differentiate dreams from reality until the age of 6 years old.

Noting children's beliefs about the social sharing of dreams further complicates previous findings. For example, it was found that children generally believe that dreams can be shared with sleeping individuals (see Laurendeau and Pinard, 1962; Woolley and Wellman, 1992). Furthermore, only at age 6 to 8 years are children beginning to grasp that dreams are not shared with waking observers. Accordingly, although numerous studies have assessed dream comprehension, the variation in results may require further research to be conducted in the area. Moreover, none of the research to date has assessed dream comprehension of very young children in South Africa.

Dreaming in Childhood and Length of Dream Reports

Understanding the nature of dreaming, and dream development in childhood, is greatly dependent on eliciting adequate dream reports. In previous studies researchers have not always been able to retrieve comprehensive dream reports from children (Oberst, Charles, and Chamarro, 2005; Strauch & Lederbogen, 1999). When questioned by researchers, children usually report very brief thematic accounts. For example, dreams in early childhood have been described as much less frequent, less emotional, and more static than dreams in adulthood. As a result, there have not been comprehensive findings noting the nature of children's dreams, dream development and the type of emotional content present in dreams across childhood (Oberst et al., 2005).

However, out of the few studies exploring dream development, the work done by Foulkes (1979, 1982) has been most notable. Foulkes collected dream reports from a group of 60 children aged 3 to 15 years. He did this via a 5-year longitudinal study conducted in a sleep laboratory, where he tracked the dream development of children. Foulkes found that preschool children reported dreams that were bland, and that these reports were usually only a sentence or two in length. Children aged 7 to 8, however, had the capacity to place themselves at the center of a dream. Consequently, he deduced that children assume an adult-like standard of dreaming as they reach middle

childhood. Foulkes concluded that the developmental changes present in the dream life reflected the cognitive and emotional changes of the child in his/her waking state.

Foulkes' work has led some researchers to conclude that childhood dreaming serves as an index for cognitive maturation (Bulkeley, Broughton, Sanchez, & Stiller, 2005; Domhoff, 1996; Murray, 1995). For example, when children possess the capacity to dream, their language and descriptive skills usually correspond with the length and narrative complexity of their dream reports (Foulkes, 1972, 1982, 2002; Domhoff, 2001). That is to say, older children are more likely to report longer and narratively complex dream reports than younger children. However, although Foulkes' study has made a profound contribution in the area of dream development, however the question of whether young children's dream reporting in an unfamiliar lab situation is reliable remains. Moreover, the emotional content of dreams was not assessed directly. Thus, our knowledge of dream development and the affective content of dreams in childhood remains incomplete.

Methodological caveats in dream research

Dreaming is a highly subjective personal experience, which makes the scientific investigation of dream content quite challenging. The fact that dreams often contain nonsensical material that is difficult to interpret rationally, makes the scientific exploration of dreams all the more difficult (Franklin & Zyfur, 2005). Hence, numerous methodological issues plague dream research. The central problem is that what is being assessed can never be observed first-hand: the researcher is dependent on the dream reports of her participants. Therefore, these dream reports may not be completely valid since people often forget their dreams shortly after waking (Colace, 2010; Domhoff, 1996).

Research has also shown that a degree of intimacy is required for dreams to be shared (Curci & Rime, 2008). Thus, another issue is the possibility that people may not feel comfortable in revealing their dreams to the researcher who may seem like a stranger. Therefore, appropriate measures need to be taken to ensure that rapport is established between the researcher and the participant. In dream research dealing with younger participants, the setting in which the data collection process takes place is crucial in this respect. This will be delineated in the next section.

Research settings for dream studies

Three different environments are used in dream research, viz. the home, school and laboratory setting. Dream content can be assessed in the home setting by parents immediately after the child wakes up (Colace, 2010). This method has been shown, however, to decrease the validity of results because parents may alter the child's report by helping along or guessing what the child may have dreamt. One of the benefits of this approach is that the data collection occurs in a familiar setting.

Another environment in which dream reports may be collected is in sleep laboratories. Researchers wake participants during specific sleep stages (viz., during REM sleep) and then interview them. This method ensures higher dream recall because the dream is recent in participant's minds. Although laboratory studies have yielded representative samples of dream content, they are time-consuming and expensive. Moreover, there is little or no difference between the dreams collected in a laboratory and those collected at home from the same adult participants. Thus, the matter of where a study takes place does not seem to have much influence on results obtained (Avila-White, Schneider, & Domhoff, 1999; Domhoff & Schneider, 1998).

However, with regard to children this may not be the case; they may find it stressful having to sleep in an unfamiliar environment. This combined with being woken up numerous times during the night by strangers may cause anxiety. As a result the dream reports of children collected in a familiar setting may differ from those collected in sleep laboratories, making sleep laboratories unsuitable for collecting dream reports of preschoolers and young children (Colace, 2010). Moreover, waking up participants immediately after REM states does not necessarily ensure that a dream will be reported, specifically with very young children. For example, in Foulkes' (1982) study only 27% of the preschoolers reported dreams after a REM awakening. Thus, alternative settings need to be used in which to assess dream content of very young children.

The last setting in which dream content is collected is at school. The data collection takes place in a familiar setting: therefore children are more likely to feel comfortable during the interview. Because the researcher is the one conducting the interviews, the results obtained might be more reliable than those obtained by parents. This method is also time-effective because the researcher does not have to train parents on how to conduct the interviews with their children. Furthermore, parents might be more inclined to let their child participate in dream research using this

methodology compared to laboratory awakenings. Children's quality of sleep is not compromised, and the inconvenience of requiring parents and children to sleep in laboratories is eliminated. However, the disadvantage of this method is the time lapse that occurs between the participant waking and the time of questioning, where a greater time lapse leads to a lower dream report rate.

Dream research methodologies for young children

Dream research makes use of numerous methodologies, such as using dream diaries, questionnaires, and interviews as means of collecting data. With young children, however, interviews are the most common method of collecting dream content. Moreover, Saline (1999) proposes that the most recent dream method is a feasible means in which to elicit dream reports from children. This method is favoured over keeping dream diaries, because parental impacts are known to taint dream reports collected at home. Furthermore, using the most recent dream method increases a child's sense of autonomy in recalling his or her dream, because children are not being coaxed into reporting anything they did not experience. Accordingly, Saline (1999) stipulates that the most recent dream method results in a higher probability of obtaining valid and reliable dream reports.

The Hall and Van de Castle (1966) coding system has been used most extensively to assess dream content, from both most recent dreams and dream diary series. Normative data for adult and children's dream content have been established. This system evaluates dream content along numerous categories: viz. (a) the physical surroundings and environment in which the dream takes place; (b) human and non-human characters present in the dream; (c) types of activities performed in the dream; and (d) the nature of the social interactions in the dream (Domhoff, 2005). However, despite the widespread use of the Hall and Van de Castle method, evaluating affect in dream content poses as a problem.

The assessment of emotions in dream research. Emotions in dream research are usually understood as any feeling states experienced by the dreamer that are explicitly expressed in the dream report (Domhoff, 1996). These emotions have to be explicitly stated because it is quite easy for raters to infer that particular emotions were felt based on the events that were experienced in the dream. Nevertheless, researchers usually overlook the explicitness rule if the dreamer delineates an autonomic nervous system response. For example, shedding tears upon hearing bad

news could be coded as sadness. Accordingly, the explicitness rule is usually overlooked when dealing with young children.

Findings regarding emotions present in dreams have varied widely: from earlier studies stating that emotions were minor and infrequent, to later findings indicating their prevalence in dreams (Nielsen, Deslauriers, & Baylor, 1991). A plausible reason for this disparity in findings may be that previous researchers did not test emotions directly. For example, dream content was assessed by means of asking questions about what characters or animals were present in children's dreams. Questions specifically assessing emotional content of the dreams were not posed in these studies (see Murray, 1995; Schredl & Satorius, 2010; Woolley & Wellman, 1992). Moreover, dream reports tend to contain detailed narratives documenting events, places and characters, but commonly lack explicit statements about feeling states during these events and interactions (S. Malcolm-Smith, personal communication, 2012). Studies conducted today still assess affect as a sub-category of dream content (Gilchrist, Davidson & Shakespeare-Finch, 2007; Maggiolini, Cagnin, Crippa, Persico, & Rizzi, 2010; Schredl, 2003; Siegel, 2005).

Affective Content in Children's Dreams

It is likely that the type of emotion present in children's dreams is contingent on age due to required cognitive and emotional development (Dunn & Hughes, 1992). Murray (1995) asserts that from 6-12 years old, children's affective dream content is mainly neutral. Moreover, as young children grow older, reaching their pre-teen years, friendly dream content becomes more frequent. The occurrence of positive emotional content in dreams may be linked to the fact that when children are young their dream content is said to be largely passive. For example, children's emotions are likely to be influenced greatly by external events, such as feeling fearful when being separated from a loved one. Therefore, negative dream content such as feeling anxious, sad, or fearful is common when children are younger. However, as children become older, this passivity decreases due to them being more self-directed. This finding is consistent with Foulkes' study (1979, 1982): once a child reaches pre-teen years they are able to place themself at the center of the dream. However, apart from the age bracket addressed above little is known about the emotional content of very young children (Colace, 2010; Dunn & Hughes, 1998; Schredl & Doll, 1998).

Although affective dream content among children aged 6 to 12 years has been

investigated by Murray (1995), this was not done in fine detail. The emotions were simply characterized as being positive, neutral, or negative. These broad categories can entail an array of emotions that are grouped together but are essentially very different. For example, emotions like fear and sadness may be interpreted as negative emotional content. Thus, researchers have no way of knowing what specific emotions are present in children's dreams and whether they are able to distinguish between the different types of emotions. Accordingly, alternative taxonomies of emotions have to be used in research endeavours regarding the affective content of dreams in children.

Emotion Taxonomies

  Ekman and Friesen's basic emotions model. Based on Ekman and Friesen's (1976) ethnographic studies, six basic emotional categories have been identified: happiness, sadness, anger, disgust, fear, and surprise. These emotional categories exist independently of culture and are considered easily recognizable in others. Researchers have found that people are able to identify these emotions in pictures, despite sociocultural differences.

  Therefore, it may be possible that younger children's dreams would primarily feature basic emotions, since they report their dreams in language that is consistent with their understanding of emotions (Dunn & Hughes, 1998; Ward, 2010). For example, research shows young children are better able to identify some emotions as opposed to others. By way of illustration, young children have the ability to identify happiness and fear easily in others, whereas other emotions, like distress, were found to be more difficult (Dunn & Hughes, 1998).

  Panksepp's core emotions model. Basic emotions have also been conceptualized in terms of an evolutionary perspective. Panksepp (2005) views emotions as being part of the evolved mammalian brain. He states that emotions are feeling states that are often accompanied by instinctual emotional behaviours that aid mammals to behave adaptively in their environments (Panksepp, 2001). Although his work is primarily based on animal research, he argues that it has merit in understanding the human condition, because it is evident that phylogenetic continuities exist in the mammalian brain. Accordingly, through the study of instinctual emotional action and via the core emotions of SEEKING, FEAR, RAGE, CARE, PLAY and SEPARATION DISTRESS (PANIC), affective consciousness can be understood.

The SEEKING system is associated with curiosity, interest and expectancy; therefore it is distinguished by exploratory behaviours (Solms & Turnbull, 2002). The FEAR system is associated with feelings of perceived threat, or a feeling of foreboding. The RAGE system is activated by frustration, and is characterized by various forms of aggression. The PLAY system is characterized by the feeling of sheer joy, and carefree rough-and tumble play. The CARE system has been linked to feelings of maternal nurturance, and is impacted by the degree of social bonding of the possessor. Additionally, social bonding also impacts the SEPARATION DISTRESS system, because it is linked to feelings of loss, sorrow and loneliness (Panksepp, 2001, 2005: Solms & Turnbull, 2002).

This model can be applied to dream research because dreams are not only images guided by one's thoughts, but are illustrations of an affective consciousness (Maggiolini et al., 2010). Panksepp (2001, 2005) substantiates this claim by stating that core emotions cover themes that are vital for survival and adapting to the environment. Therefore, one could argue that young children's dreams would manifest these types of emotions across their development. For example, the SEPARATION DISTRESS system that is connected to social bonding is activated by the separation from a loved one. Consequently, when children dream about being left alone in a shopping mall and experience the anxiety and pain of that separation they are being taught to stay in close proximity to their caregivers (Solms & Turnbull, 2002).

Moral Emotions. The models delineated above do not include, however, the entire range of emotional experiences. It may be plausible that more complex emotions arise once people have the capacity of reflective awareness, and are able to evaluate themselves in relation to external influences. Moral emotions are emotions that require a social context. These emotions usually arise when an individual has the capacity to value other people's responses and/or opinions regarding himself/herself.

Haidt (2003) proposed the following set of moral emotions: contempt, disgust, shame, embarrassment, guilt, compassion, gratitude, and elevation. These more complex emotions imply that an individual possessing them is aware of other people's views. For example, shame, guilt and embarrassment are elicited by self-reflection and help people adhere to rules, by governing themselves in ways that are directed towards adherence to moral standards (Tangney, Stuewig, & Mashek, 2007). Contempt and disgust alternatively, are underpinned by negative feelings about

others' behaviour and/or character, whereas gratitude and elevation are evoked from positive occurrences. Thus, one could argue that in order to experience moral emotions the possessor has to be aware of and capable of reflecting on the relationship exists between herself and other people (Dunn & Hughes, 1998; Ward, 2010).

Accordingly, a certain degree of cognitive and emotional development is necessary to experience and identify these emotions in others. Consequently, Ward (2010) proposes that moral emotions may require a sophisticated attributional process that is associated with more developed brain functioning. He goes further by saying that a particular level of cognitive development is needed in order to comprehend the thought and beliefs of others. Hence, one could argue that the more advanced children's cognitive abilities become, the more likely they are to experience and identify complex moral emotions.

Rationale and Aim of the Study

It is evident that numerous methodological issues plague dream research. This of course makes enquiries into people's dream life, especially children's, all the more cumbersome. As a result, there has been very little systematic investigation of dream development in children. Additionally, research assessing the emotions present in dream content of young children has been sparse. As it stands, it would be valuable to investigate the various types of emotions present at different stages of development in children.

This study explored whether dream development in children can be reliably investigated by means of assessing young children's comprehension of dreams. Moreover, this exploratory study also aimed to assess the emotional content of dreams of preschoolers and slightly older school-age children. Consequently, preschoolers and slightly older school-aged pupil's comprehension of emotions in various emotion taxonomies was also assessed. Furthermore, ascertaining whether a difference exists in the nature of the emotional content of dreams between these two groups was addressed. The following hypotheses were examined:

H_1: Participants' dream comprehension will be markedly better in Grade 2 than in Grade R.

H_2: Grade 2 participants' comprehension of basic, core and moral emotions will be markedly better than the emotion comprehension of Grade R participants.

H_3: The narrative complexity of dream reports between groups will differ: dream reports of Grade R participants will be shorter than the dream reports of Grade 2 participants.

H_4: The incidence of moral emotions in the dreams of Grade R participants will be markedly reduced in comparison with its incidence in Grade 2 participants' dreams.

Method

Design and Setting

A quantitative, quasi-experimental design was used in this research study. Participants were not randomly assigned, but separated based on a pre-existing criterion variable, viz. grade (Blanche, Durrheim, & Painter, 2006). Ratings of comprehension of dreaming and of emotions, as well as emotion present in children's dreams were the outcome variables. The dream reports were retrieved via structured interviews that took place in the participants' classroom at school during first period.

To ensure equivalence between the two groups (apart from age differences associated with children's grade), participants were matched on their gender and race (see Blume-Marcovici, 2010). Moreover, recruiting both groups from the same school ensured that participants were from fairly similar socioeconomic backgrounds, viz. middle class. In addition, all participants identified English as their home language.

Participants

The study was granted ethical approval by the Ethics Committee of the University of Cape Town's Department of Psychology. The school granted permission to recruit participants. Because this was a private institution, ethical approval from the Western Cape Education Board was not necessary. Participation was voluntary, and parents and children were assured they could withdraw at any point. All data was treated as confidential, and anonymity in any reports or publications was guaranteed. Written informed consent was acquired from participant's parents, or legal guardians, and assent was obtained from the participants prior to data collection.

A total sample of 40 participants took part in this research study. The participants were recruited from a private college in Cape Town. Convenience

sampling was used because each group of participants was sampled from one class in their respective grade. For the preschool group, twenty 5-6 years olds from a Grade R class participated in the study. Equally, the slightly older school-aged group consisted of twenty 8-9 year olds from a Grade 2 class. The basic demographic characteristics of the Grade R group ($n = 20$) and the Grade 2 group ($n = 20$) are presented in *Table 1*. Furthermore, all participants were English first-language speakers. Therefore issues of miscommunication due to language barriers were not present, because the interview questions were also posed in English.

Table 1

Demographic characteristics of the sample

	Grade	
	R	2
	(*n*=20)	(*n*=20)
Age Range (Years)	5-6	8-9
Age (Years)		
Mean (SD)	5.55 (.51)	8.05 (.22)
Gender		
Male: Female	11:9	6:14

Measures

       Dream report collection. The first measure for dream report collection was the structured interview (see Appendix A). The questions used were based on a similar structure used in dream research with children conducted by Colace (2010). These types of interview questions may be used in a culturally diverse context like South Africa provided the participants are first-language English speakers (Colace, 2010).

       After dream comprehension was assessed, the child was asked to report a recent dream he/she had experienced. When a participant remembered dreaming, the researcher asked him/her to describe it. While this was being done, the researcher did not interrupt the narration. Once the narration was finished, the researcher asked the participant about how he/she felt in the dream. It was important that the researcher did not make any reference to a specific emotion.

Emotion coding system. Constructing a coding system for emotions in dreams is a highly difficult task, because there are vast set of words that can be used to describe how we feel (Domhoff, 1996). Moreover, these emotions often blend into one another, and as a result overlap may occur. Past studies made extensive use of the Hall and Van de Castle (1966) method, which coded for 5 affective categories: anger, apprehension, sadness, confusion, and happiness (see Dale & DeCicco, 2011; Foulkes, 1979, 1982; Maggiolini et al., 2010). However, these categories do not represent any particular emotion taxonomy. In this study Ekman and Friesen's taxonomy of basic emotions, Panksepp's taxonomy of core emotions, and a subset of more complex moral emotions were used for rating emotional content in dream reports (see Appendix B).

Procedure

The first step in conducting this study was gaining entry into the school. The principal from the private school was approached, and briefed on the aims of the study (see Appendix E). After having received consent from the principal, parents' written consent was required. Informed consent forms were distributed in the two classrooms, for the children to take home to their parents. Only pupils for whom informed consent was given took part in this study.

Prior to testing it was considered prudent to first spend time with the participants in their everyday environment. This allowed the children to become familiar with the researcher, thus facilitating the data collection process (Kryonlampi-Kylmanen & Maata, 2011). The researcher was introduced to the participants by their schoolteacher a week prior to testing. Attempts at establishing rapport were also made: the researcher spent time with the children during class hours, and interacting and helping with activities.

In dream research, the setting in which the data collection takes place can have certain influences on the dream reports obtained. For example, children assessed at school are known to want to compete or impress one another based on dream reports given. Accordingly, each child was interviewed individually in a vacant classroom, thus reducing the effect external interference might have on the dream reports. In this study only recent dreams were collected; they were characterized as dreams that happened "last night", "in the week", or "on the weekend". Recent dreams are more reliable because they are relatively "fresh" in the mind, and can be recalled more

easily (Saline, 1999).

On the day of testing, children whose parents had provided written consent were asked individually if they wanted to partake in the study. Once assent was given, they were then asked what they understood about a dream. After dream comprehension was assessed, the structured interview commenced. The interview was recorded on an electronic device and transcribed via verbatim. Subsequently, the interviewer evaluated children's dream comprehension based on the dream report transcriptions. Degree of comprehension was coded into three categories, viz. "did understand", "might have understood" and "did not understand". Children's emotion comprehension of the three taxonomies was coded in the same manner. Moreover, dream report credibility was also coded into three categories, viz. "credible dream report", "possible credible dream report" and "not a credible dream report".

Two independent raters then coded the emotional content of children's dreams using their dream reports. Blind analyses eliminate the possibility that researchers analyzing their own data look for connections based on their own preconceived notions (Domhoff, 2003). Accordingly, this standard protocol is the most suitable approach in the scientific assessment of dream content, because independent raters are unaware of the hypotheses tested. Therefore, applying this principle ensured that the ratings in this study were not biased.

Data Analysis

Dream report length. Dream length was assessed manually by evaluating the number of words a child used to describe their dream in the verbatim transcription of the interview. The word count however, did not include repetitions and comments. This procedure follows that used by other studies in the field viz. Foulkes (1979, 1982) and Colace (2010).

Intercoder Reliability. Because two independent raters were used to code the data in this study, it was imperative to assess intercoder reliability. According to Domhoff (1996) ensuring intercoder reliability is crucial when performing content analysis in dream research. The "percentage of perfect agreement" is used to ascertain whether there is consistency between the two coders rating dream content. This stringent method makes use of the number of times the raters agree on various dream elements. To calculate intercoder reliability one merely needs to divide the number of

coding agreements by the number of coding agreements together with the number of disagreements.

Statistical analysis. This study yielded categorical and continuous data, which was analysed by two types of statistical tests using version 21.0 of the SPSS software package (IBM Corp., 2010). A chi square test of contingency was used to evaluate participants' dream comprehension between grades. Additionally, the understanding of each emotion category, viz. Ekman and Friesen's basic emotion comprehension, Panksepp's core emotion comprehension, and moral emotion comprehension was also analyzed using this statistical method. An independent samples *t*-test was used to assess the narrative length of dream reports of participants between groups. Lastly, crosstabulations were utilized to assess the frequency of basic, core, and moral emotions reported by Grade R and Grade 2 participants.

Results

Intercoder reliability

In this study the intercoder reliability was calculated by means of the perfect percentage agreement method (Domhoff, 1996). As previously stated, this makes use of the amount of agreements between the two raters, divided by the sum of the number of agreements and disagreements in each category. For this study, the intercoder reliability between the two independent raters was good (see Table 2).

Table 2

Frequency counts of emotions present in dream reports and intercoder reliability

Emotion Taxonomy	Codings by Rater 1	Codings by Rater 2	Percent perfect agreement
Ekman Basic Emotions			
Happy	22	21	97.5
Sad	2	3	92.5
Anger	0	1	97.5
Fear	13	13	100
Surprise	0	1	97.5
Disgust	0	0	100
Panksepp Core Emotions			
SEEKING	17	10	82.5
FEAR	16	13	95
RAGE	1	1	100
CARE	1	1	100
PLAY	8	6	92.5
Separation Distress	3	1	95
Moral Emotions			
Gratitude	0	0	100
Pride	0	1	97.5
Guilt	0	1	97.5
Shame	0	0	100

Assessment of child comprehension based on self-report ratings

Dream comprehension was assessed in order evaluate whether it is possible to investigate young children's dreams. Moreover, children's relative understanding of emotions from the three emotion taxonomies was also evaluated. Assessing young children's emotion comprehension is necessary in ascertaining whether the emotional content of their dreams can be reliably investigated. Consequently, the above steps are fundamental in obtaining credible dream reports. The assessment of children's dream

comprehension and the comprehension of basic emotions, core emotions and moral emotions were evaluated by means of chi square tests. The assumptions of independence and expected frequencies were met.

Dream comprehension. According to the Pearson Chi-square, dream comprehension shows a statistically significant, extremely strong association with participant's grade (see Table 3).This degree of association is based on Howell's (2006) interpretation guidelines of Cramer's V. This indicates that children's understanding of dreaming, and differentiating between dream life and waking states is dependent on grade. That is, slightly older school-aged children (Grade 2 participants) have a better understanding of what a dream is, than preschoolers (Grade R participants) in this study.

Table 3

Child's understanding of the concept of a 'dream'

		Understood	Might have understood	Did not understand	χ^2	p	V
Grade	Grade R	9 (45)	9 (45)	2 (10)			
	Grade 2	19 (95)	1 (5)	0	11.971	.001	.529
Total		28 (70)	10 (25)	2 (5)			

Note: percentages are given in parentheses.

Dream report credibility. Based on the Pearson chi-square, credibility of dream reports exhibited a statistically insignificant, moderately strong association with the grade of the participants (see Table 4). That is, children's likelihood of reporting a credible dream did not appear to be influenced by grade. However, in the Grade 2 group, only 1 participant's dream report was questionable. Whereas in Grade R, 5 doubtful dream reports were given, with one being deemed as not credible.

Table 4

Degree of credibility of dream reports given by the child

		Authentic dream report	Might be a dream report	Not a real dream report	χ^2	p	V
Grade	Grade R	15 (75)	4 (2)	1 (5)			
	Grade 2	19 (95)	1 (5)	0	3.271	.195	.286
Total		34 (85)	5 (12.5)	1 (2.5)			

Note. Percentages are given in parentheses.

Comprehension of Ekman and Friesen's basic emotions. The overall result of the chi-square test was significant, *p* < .05 (see Table 5). Indicating that understanding Ekman and Friesen's basic emotions was contingent upon the grade of the dreamer. That is, basic emotions were better understood in Grade 2, with only 1 participant falling in the might have understood category. Furthermore, according to Howell (2006) an effect size between .30 and .35 is considered a strong relationship. Thus, there is a strong relationship between understanding basic emotions and children's grade.

Table 5

Child's understanding of basic emotions

		Understood	Might have understood	Did not understand	χ^2	p	V
Grade	Grade R	14 (70)	6 (30)	0			
	Grade 2	19 (95)	1 (5)	0	4.329	.037	.329
Total		33 (82.5)	7 (17.5)	0			

Note. Percentages are given in parentheses.

Comprehension of Panksepp's core emotions. The overall result of the chi-square test for the comprehension of Panksepp's emotions was significant, with *p* < .05, indicating that understanding core emotions was contingent upon the grade of the dreamer. Grade R participants had poorer comprehension of core emotions than Grade 2's. Moreover, according to Howell's (2006) guidelines, there is a very strong relationship between understanding core emotions and children's grade.

Table 6

Child's understanding of core emotions

		Understood	Might have understood	Did not understand	χ^2	p	V
Grade	Grade R	14 (70)	5 (25)	1 (5)			
	Grade 2	20 (100)	0	0	7.059	.029	.420
Total		34 (85)	5 (12.5)	1 (2.5)			

Note. Percentages are given in parentheses.

Comprehension of moral emotions. Lastly, a statistically significant association was found between the grade of the dreamer and their capacity to understand moral emotions. Moreover, this association was very strong; with Grade 2 participants understood moral emotions better than the Grade R participants. However, the comprehension of the majority of Grade 2 participant's was questionable, with only 12.5% of participants showing a sufficient understanding of moral emotions.

Table 7

Child's understanding of moral emotions

		Understood	Might have understood	Did not understand	χ^2	p	V
Grade	Grade R	0	7 (35)	13 (65)			
	Grade 2	5 (25)	14 (70)	1 (5)	17.619	.000	.664
Total		5 (12.5)	21 (52.5)	14 (35)			

Note. Percentages are given in parentheses.

Length of Dream Reports

To assess dream report length, the word counts of each participant's dream reports were entered into SPSS. Note the two participants who did not report a credible dream account were excluded from this analysis. Subsequently, a one-tailed independent samples *t* test was performed (I hypothesized that older children would provide longer reports). The assumptions of normality, Levene's test for equality of variances (homogeneity of variance), and independence of observations were upheld. Grade 2 participants exhibited a higher word count in dream reports (*M* = 35.55, *SD* = 26.20) compared to those of the Grade R

participant's ($M = 24.65$, $SD = 18.89$).This difference was not found to be statistically significant, t (38) = 1.51, p = .07. That is, length of dream reports is not impacted by the grade of the dreamer. However, the effect size was moderate, d = .49, indicating that the small sample size and resultant low power, along with the marked variability within groups, were responsible for the non-significant result.

Emotions in Children's Dreams

Prevalence of emotions in dream reports separated by emotion taxonomy. Crosstabulations were used to assess the prevalence of emotions in children's dreams. This was done by comparing the ratings of emotions in the three taxonomies between Grade R and Grade 2 participants. The frequencies and percentages of each emotion present in children's dream reports are stipulated.

Ekman and Friesen's basic emotions. Based on this emotion taxonomy, the Grade R participants exhibited the highest reports of basic emotions (52.5%). However, there was not a large disparity between the two groups, with Grade 2 participants reporting 47.5% (see Table 8). Happiness was the most frequently emotion coded in both groups. Fear was the second most coded emotion, being reported more frequently in the Grade R group. Sadness was coded equally between groups, whilst anger, surprise and disgust were largely absent. For a graphical representation of the emotion distribution between groups see *Figure 1*.

However, because surprise and anger were coded infrequently, and disgust was not coded at all, it was not possible to use Pearson's chi-square to assess if any one emotion was reported more often than the others. Thus, only happiness and fear (the two most frequently coded emotions) were examined in the basic emotions category via Fisher's exact test. The Fisher's exact test for happiness and fear in relation to participant's grade was statistically insignificant, p = 0.496. Thus, there is no association between the rate at which happiness and fear were reported between Grade R and Grade 2.
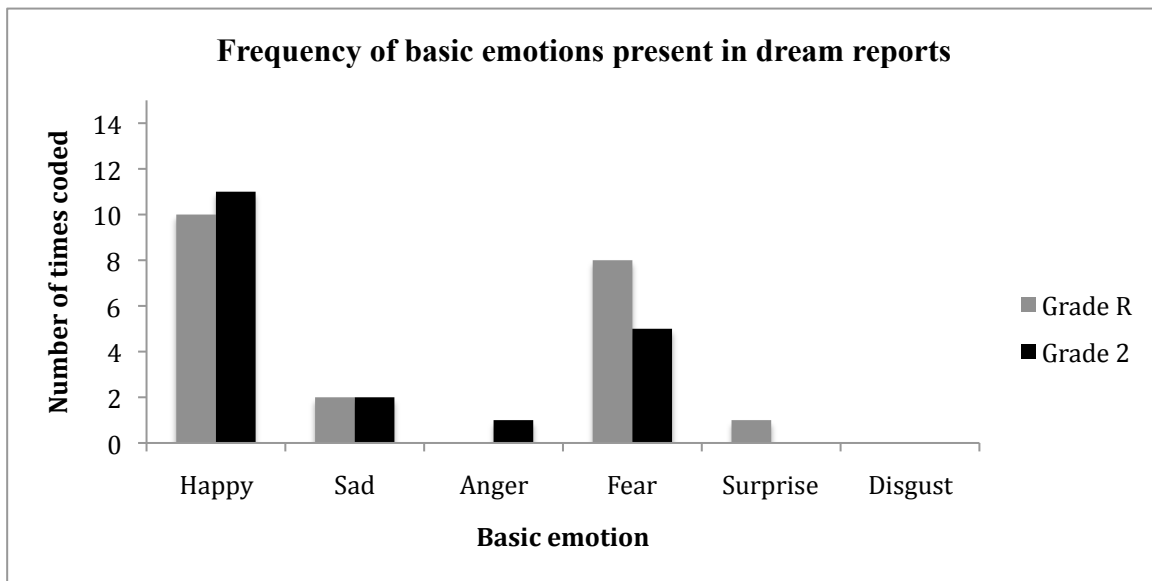
Figure 1. Raw values of basic emotions present in dream reports across the two groups.

Pansepp's core emotions. The dream reports of Grade R participants accounted for just over a half of the total codings in this emotion taxonomy (51.2%). Whilst Grade 2 participant's accounted for 48% of the total reported core emotions. SEEKING was the most frequently coded emotion overall; with 60% of Grade 2 participants reporting it in their dreams. FEAR was the most frequently coded emotion in the Grade R participants' dream reports, and the second most coded emotion in the Grade 2 group. PLAY was coded more often in Grade R than in Grade 2. The least coded emotions were SEPERATION DISTRESS, CARE and RAGE (the latter was absent in both groups). For a graphical representation of the emotion distribution between groups see *Figure 2*.

Certain core emotions, were also reported infrequently. Accordingly, it was not possible to use Pearson's chi-square to assess if any one emotion was reported more often than the others. Thus, only SEEKING and FEAR (the two most frequently coded emotions) were examined via Fisher's exact test. The Fisher's exact test for SEEKING and FEAR in relation to participant's grade was statistically insignificant, $p = 0.157$. Therefore, there is no association between the rate at which SEEKING and FEAR were reported between Grade R and Grade 2 participants.
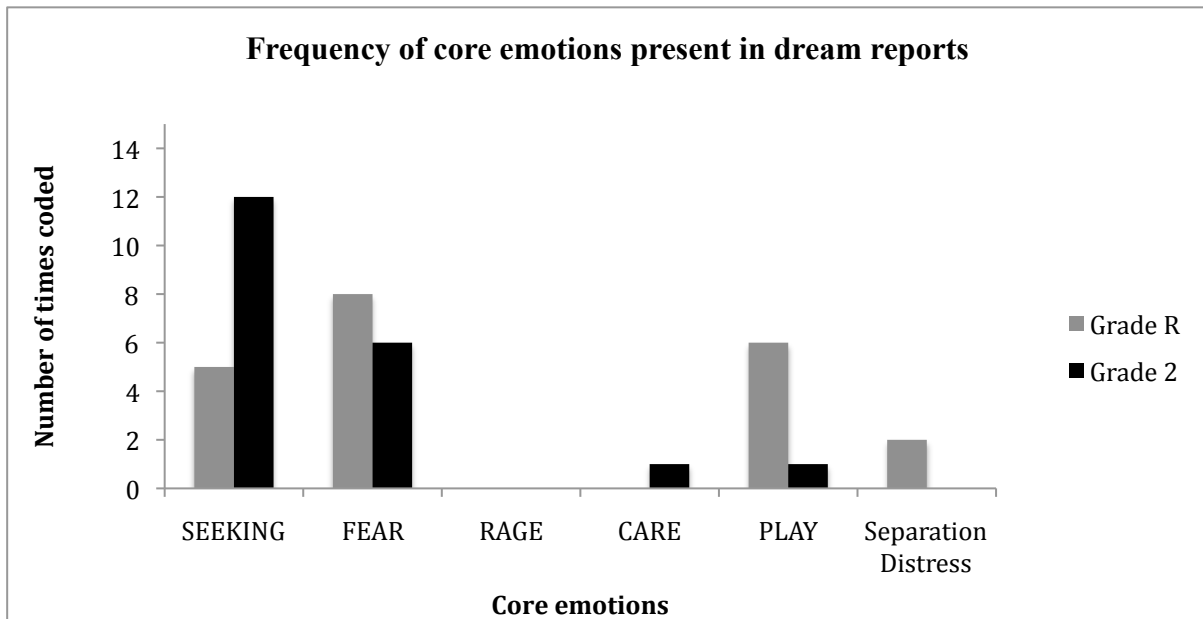
Figure 2. Raw values of core emotions present in dream reports across the two groups.

Moral emotions. Moral emotions in Grade R were completely absent. In Grade 2, pride was only experienced by 10% of the participants, whilst guilt was experienced by 5% of the participants. Gratitude and shame were not present in Grade 2 participants dream reports. For a graphical representation of the emotion distribution between groups see *Figure 3.*
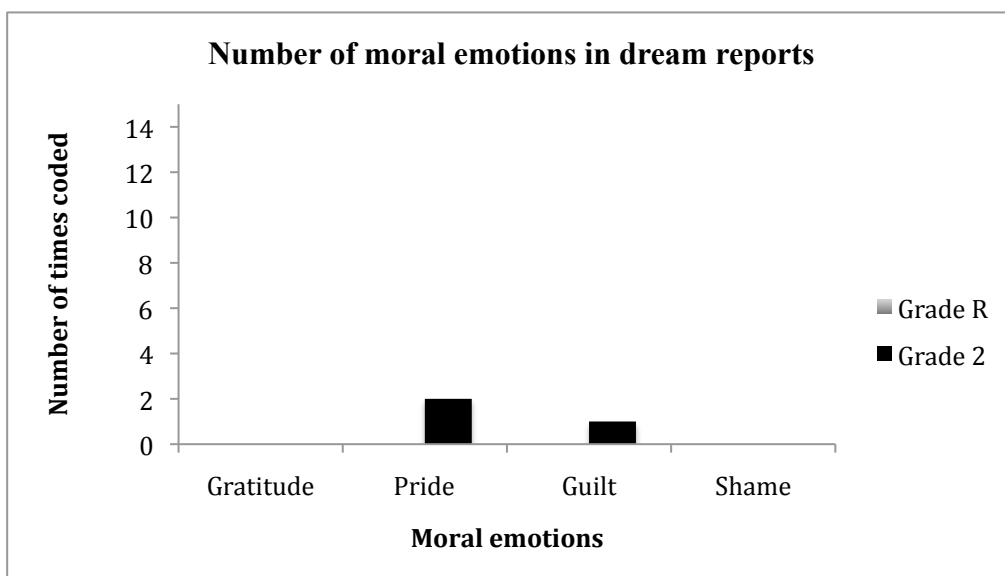

Figure 3. Raw values of basic emotions present in dream reports across the two groups.

Discussion

Children's Dream and Emotion Comprehension

Children's understanding of dreams is impacted by age. That is, Grade 2 participants were rated to have better dream comprehension than Grade R participants. Accordingly, the first hypothesis was upheld: participants' dream comprehension is markedly better in Grade 2 than in Grade R.

From the results it is evident that basic and core emotions are comprehended by both groups of participants. However, Grade 2 participants performed better on all emotion comprehension ratings. Therefore, hypothesis two was upheld: Grade 2 participants' comprehension of basic, core and moral emotions is markedly better than the understanding of Grade R participants. The reason for this is that, moral emotions are more reliant on more developed meta-cognitive abilities and self-reflection (Haidt, 2003; Ward, 2010).

These findings may be related to previous work conducted in developmental psychology. For example, according to theories of cognitive development, children's comprehension of emotions may be associated with their cognitive development, chiefly because children's understanding of emotions follows the developmental stages associated with age (see Fischer, 1980; Piaget, 1954, 1981 as cited in Casey, 1992). Thus, the findings in the study are consistent with this theory: Grade 2 participants had higher dream and emotion comprehension rates than Grade R participants.

Length of Dream Reports

In this study the average word count for Grade R participants was twenty-five words. This group reported a lower word count than previous research using participants of the same age: Colace (2010) found that children aged 5 to 7 years reported an average of forty-one words in their dream reports. Therefore, the present study's Grade R participants reported shorter dream accounts compared to children of the same age in Colace's (2010) study.

However, it should be noted that in the Colace study, children aged 3 to 5 years were used as the *preschool group*. This group reported an average of twenty-three words in dream reports. Considering that both preschool groups thus exhibited roughly the same average number of words in dream reports, report length may be associated with the relative development skills children acquire in waking states. That is, dream report length may be associated with the cognitive development characteristic of a child with a preschooler's level of education.

In Grade 2, participants' (aged 8 to 9 years old) dream reports had an average of

thirty-six words. This word count, however, is still less than that of Colace's slightly older school-aged group (aged 5 to 7 year old). At present, it is not possible to deduce whether dream report length is influenced by age, or by years of formal education, especially when considering that there are no other studies that have assessed dream report length in South Africa. Consequently, we have to be cautious when comparing local findings to studies conducted in developed countries.

However, based on the word counts present in groups across both studies it seems plausible that the length of children's dream narrations is somehow contingent on the degree of acquired education. That is, grade (as oppose to age) may be a better predictor of the length of children's dream reports.

Having said that, the large standard deviation scores present both groups indicate that there was a marked variation in the number of words reported within groups. Namely, some children reported very long dream accounts, whilst others reported shorter dream narrations in both groups. Consequently, individual differences may also have an impact on dream report length. Colace (2010) states that young children may have a tendency to embellish dream reports and create more detailed accounts. Accordingly, this might explain why some dream reports were markedly longer than others.

Ultimately, this study found a trend in word count between groups; the dream reports of Grade R participants were shorter than the dream reports of Grade 2 participants. This finding is consistent with previous studies conducted by Colace (2010) and Foulkes' (1979, 1982). However, the present study did not find a statistically significant association between grade and dream report length. Therefore, hypothesis 3 was not upheld: the length of dream reports between groups did not differ significantly. Given the effect size, this was most likely due to insufficient statistical power.

Prevalence of Emotions in Dreams Reports

There was no significant difference between the rates at which Grade R and Grade 2 participants reported emotions from the basic and core emotion categories.

Most frequently coded emotions in dream reports.

Happiness in dream reports. Happiness was the most frequently coded emotion in both groups in Ekman and Friesen's taxonomy. This finding is consistent with past research: Foulkes (1982) found that happiness was the most coded emotion. However, unlike Foulkes' study, which reported the emotion in 15% of children's dream narrations, happiness in the present study was coded in 52.5% of children's dream reports.

SEEKING in dream reports. SEEKING was the most frequently coded emotion in both groups for Panksepp's taxonomy. However, because no study has used this specific category to code emotional content of dreams, there are no previous findings to compare the present results. Having said that, perhaps the prevalence of SEEKING in dream reports may be due to children's innate desire to explore (Solms & Turnbull, 2002). Between the ages 3 and 15 years children's dream life undergoes substantial changes (Colace, 2010; Foulkes, 1982; Strauch & Lederbogen, 1999). Furthermore, this age group is also marked by the beginning of schooling in childhood; therefore, perhaps the process of learning in daily life is related to the presence of SEEKING in dreams. That is, children are usually taught to ask questions at school and this adds to their curious nature. Moreover, the higher rates of SEEKING in dream reports among Grade 2 participants may be due to their ability to place themselves at the center of the dream (Murray, 1995; Spiegel, 2005). Additionally, their behaviour may be more self-directed; hence they are more likely to *seek* in order to obtain rewards.

Fear/FEAR in dream reports. Fear/FEAR was the second most frequently coded emotion in both basic and core emotion taxonomies. This finding is consistent with the results of Foulkes' study; however fear/FEAR was coded more often in the present study. Having said that, these findings do not corroborate Foulkes' notion that fear only appears in children's dreams at the ages of 7 to 9 years. Evidence against this claim is seen in the higher prevalence of fear/FEAR in dreams being reported in the preschool group, comprising of children aged 5 to 6 years.

Moreover, the lower frequency of fearful dream content in the slightly older school-aged group may be more consistent with the work of Murray (1995). That is, negative dream content may decrease as children become older due to a change in their degree of passivity. As was stated previously, children's degree of passivity decreases as they become older, and children become more self-directed at ages 7 and 8. Accordingly, while being a victim is common in very young children's dreams, this trend decreases with age (Siegel, 2005).

A possible reason is that older children are more able to evaluate their capabilities in dreams. For example, the fearful content in Grade R participant's dreams was largely witnessing a scary event, feeling scared and being alone in a dark place. However, in Grade 2, participant's reported active responses such as running away and escaping. Moreover, Grade 2 participants reported feeling other emotions in response to fear/FEAR. For example, one participant reported feeling guilty in the dream after a robber had broken into her house: the dreamer reported that she felt it was her responsibility to protect the house and her

family's belongings.

Therefore based on the dream content collected, it seems that younger children feel more vulnerable in their dreams than older children. This finding is consistent with Murray (1995) and Siegel (2005) who asserted that fear is more often experienced when children are younger due to their feelings of vulnerability.

Least frequently coded emotions in dream reports. In Ekman and Friesen's basic emotions taxonomy, anger, surprise and disgust were the least coded emotions. In addition, RAGE, CARE and SEPARTION DISTRESS were the most infrequently coded emotions in Panksepp's taxonomy.

Anger and RAGE in dream reports. The lack of anger and RAGE in dream reports was consistent with past research: Foulkes (1982) stated that anger doesn't appear in dreams prior to the age of 7-9 years. Moreover, he stressed that anger and aggression is least prominent in dream material when compared to other negative emotional content, such as fear. A possible reason for the lack of anger in the present study may be due to more girls being in the Grade 2 group. Oberst et al. (2005) asserted that boys are more likely to experience anger in their dreams than girls of the same age. Considering that this age group (7 to 9 years old) is conceptually more likely to experience anger than younger children, this may account for the lack of anger reported in this study.

Having said that, it is interesting that the rate at which anger was reported did not differ between studies, perhaps chiefly because Foulkes' study was conducted during a period where children were not exposed to violent media. Today, however, young children, regardless of gender, are more widely exposed to aggressive content in the form of video games and movies. Accordingly, one might assume that emotions of an aggressive nature would be more prevalent in children's dreams at present, than in studies conducted many years ago (see Oberst et al., 2005). However, it is evident that more research has to be conducted in order to assess this possibility.

Surprise in dream reports. Many researchers have debated the appropriateness of conceptualizing surprise as an emotion, arguing that surprise is a startled reflex (Ekman, Friesen, & Simons, 1985). Thus, the lack of surprise coded in dream reports may be due to the fact that children may not experience surprise as an emotion. For example:

Dream 15: child aged 5 years old
"I dreamed that I was on somewhere and I didn't know I could fly. So I just fell down, and I flew up!"

Instead of feeling surprised by the sudden ability to fly, she reported feeling happy. Thus, it is possible that young children may not regard surprise as an emotion since it is not event-specific. For example, surprise can be elicited from positive or negative events or experiences. Consequently, this may cause confusion as to whether it is an emotion or not (Ekman et al., 1985).

The emotion of disgust in dream reports. Research has viewed disgust as an emotional response to food, or aversion to specific objects like urine or feces (Rozin & Fallon, 1987). The absence of disgust in dreams may be due to the majority of children's dreams being of a positive nature. Moreover, the only case of participants dreaming of eating were the 20% of Grade 2 participants reporting being in a candy land or candy shop eating sweets and chocolates. Thus, although children may experience disgust towards specific stimuli in waking life, it is unlikely that disgust may be experienced in dreams unless children dream about the specific objects or food stuffs that they are averse to (Rozin & Fallon, 1987).

Moral Emotions in Dream Reports

The fourth hypothesis regarding the incidence of moral emotions in dream reports between groups was not upheld. Moral emotions did not feature greatly in dream reports in either group: Grade R participants reported zero moral emotions, and only 15% of Grade 2 participants experienced the emotions in their dreams. Thus, even though Grade 2 participants experienced more moral emotions than Grade R participants, this only occurred in a minority of reports. This preliminary finding suggests that children aged 8 to 9 years old do not commonly experience complex emotions in their dreams.

Limitations and Future Directions

A major limitation of this study is the small sample utilized. However, this was due to time constraints and difficulty recruiting parents to allow their child to participate in the study. In this respect, it may be useful to get parents involved in the research procedure. Parents are able to question their child immediately after waking, which increases the rate at which a dream will be reported. Additionally, this may lead to more details being recalled due to the dream being more "recent" in the child's mind. Having said that, various measures need to be taken to ensure that parents do not influence or taint their child's dream report. Accordingly, research personnel should brief parents on how to properly conduct the interview. Although this may be a more time consuming endeavour, it is a necessary step

towards gaining comprehensive and credible dream reports. However, some parents might be even less inclined to participate when the research places greater demand on them.

One issue that has been highlighted in past research is the disparity between the codings of independent raters and the self-report ratings of participants. For example, independent raters usually overestimate negative emotional content in dream reports, whereas participants usually report an equal number of positive and negative emotions, with the former often being reported more frequently (Domhoff, 2003, 2005; Schredl & Doll, 1998).Thus, future research should make use of child ratings in conjunction with independent rater codings in order to yield accurate ratings of emotional content in dreams (Colace, 2010).

Moreover, it may also be worthwhile to assess the narrative complexity of dream reports in greater detail. (e.g., Colace, 2010; Foulkes, 1979, 1982). For example, noting the number of verbs and the narrative sequence of children's dream reports may offer more insight pertaining to dream development in childhood.

Due to the exploratory nature of this study, only tentative conclusions can be drawn from the results. Accordingly, future research needs to be conducted in order to assess whether these findings hold in a larger and more representative South African population. Hence, studies in this domain should make use of a bigger sample of participants from various schools across South Africa. Note the results obtained in this study only reflect middle-class children's (a) dream and emotion comprehension; (b) dream report length; and (c) emotional dream content. Thus, it may be interesting to assess children from various socioeconomic strata to investigate if differences in the above aspects of dreams exist.

Conclusion

This exploratory study aimed to assess whether dreams could be investigated in young children in South Africa. Based on the relative comprehension ratings it is evident that dreams and the emotional content of dreams can be investigated in preschoolers and slightly older school-aged pupils. However, the assessment of complex moral emotions in dreams may require a slightly older sample of children. Based on the findings, Grade R and Grade 2 participants' dream reports contained more positive than negative affect. Moreover, both groups did not differ markedly on the amount of emotions coded in the three taxonomies. Dream report length seemed longer in the slightly older school-aged group, however this difference was not statistically significant. Accordingly, further investigation of the emotional content and narrative complexity of children's dreams is required, in order to gain a more comprehensive understanding of the nature of dreaming in childhood. Assessing these

aspects of dream content would be useful in identifying the relative stages of cognitive and emotional development waking states, with the associated dream development in childhood.

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